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DEVELOPMENTAL CHANGES IN THE USE OF INTERPERSONAL
TACTICS TO OBTAIN AN OBJECT

by

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Date: _____

Approved:

Michael A. Wallach, Supervisor

Dissertation submitted in partial fulfillment of
the requirements for the degree of Doctor
of Philosophy in the Department of
Psychology in the Graduate School
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ABSTRACT

(Psychology-Clinical)

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Although there is an extensive body of literature regarding aggressive behavior in children, there is little known about the developmental changes in the form and the function of aggressive behavior during early childhood. A critical review of prior observational studies indicates that there are serious methodological problems which jeopardize the internal validity of their results. These studies, however, indicate that conflict over the possession of objects is the most frequent context in which aggressive behavior occurs for 3- to 5-year olds. The predominant function of aggressive behavior during this period appears to be the achievement of non-aggressive goals. Aggressive behavior is considered to be one category of interpersonal tactics by which a child can influence a peer. The primary purpose of this observational study is to provide descriptive data on the types of interpersonal tactics used to obtain an object from a peer and the developmental changes in the use of such tactics.

Twenty white male dyads of middle socioeconomic status at two age levels (3, 5) were observed in a controlled setting within the preschool. Transcripts of video recordings of the solicitation process were used as data. A coding system was developed from pilot observations to describe the types of solicitations used to obtain an object from a peer and the types of responses used to maintain control of the object. Solicitation categories are of two major types: neutral bids and elaborated bids which incorporate a persuasive element. Five dimensions of influence are identified by which the child tries to persuade the other to relinquish the object.

The results of this study indicate that 3-year-old solicitors did not differ from 5-year-old solicitors in their use of verbal instrumental aggression or physical aggression such as taking the object. Three-year-old solicitors were twice as likely as 5-year olds to attack the possessor, however. In contrast to the 3-year olds, the 5-year-old solicitors utilized a greater number of non-aggressive strategies which incorporated some type of persuasive element. They demonstrated the use of rudimentary perspective-taking skills as well as the use of the principle of equality in turn-taking. Although 3-year olds were more likely to attack than 5-year olds at any point in the process, both age groups increased their use of attack at the end of the process compared to the beginning. Five-year olds were found to have a more finely differentiated hierarchy by which they progressed from noncoercive to coercive strategies.

ACKNOWLEDGMENTS

I would like to express my appreciation to Michael Wallach for his continued help throughout this project. Not only has he provided sound academic guidance, but he also has provided invaluable emotional support. I also would like to thank Neal Finkelstein for his tremendous contributions to many different phases of this study.

In addition, I would like to thank Cliff Butzin, Carol Eckerman, Mary Mayesky, and Gary Mesibov for their helpful comments and participation on my committee.

Special thanks to Edna Bisette and Verble Roberts for their patience and expertise in editing and typing the manuscript.

H. H. B.

This work is dedicated
to Ed, who has believed
in me and encouraged
me to be myself.

H. H. B.

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INTRODUCTION

Although there is an extensive body of literature regarding aggressive behavior in children, there is little known about the developmental changes in the form and the function of aggressive behavior during early childhood (Bonner, 1976; Caldwell, 1977; Feshbach, 1970; Hapkiewicz, 1974; Hartup, 1974; Patterson, 1979; Shantz & Schomer, 1978). In summarizing the research on children's aggression, Feshbach (1970) concludes:

The most obvious hiatus and, in many respects, the most important is the absence of descriptive, normative data bearing on the development of aggression. Of particular interest are the patterns of aggression and the transformation in these patterns that occur during the period from birth to the child's fifth year. During this period, the rudiments of instrumental aggressive behaviors and of the affective drive structure of aggressive motivation are established. (p. 242)

Numerous observational studies whose purpose has been to provide such descriptive data have been conducted (Appel, 1942; Dawe, 1934; Jersild & Markey, 1935; McKee & Leader, 1955; Muste & Sharpe, 1947; Roff & Roff, 1940; Walters, Pearce, & Dahms, 1957). A critical review of these studies, however, indicates that there are serious methodological problems which jeopardize the internal validity of their results. There are too many "plausible alternative hypotheses that are consistent with the data" (Altmann, 1974, p. 229) to allow one to feel confident that the results are a function of age-related variables.

This observational literature, however, does suggest a focus for the future investigation of aggressive patterns and their transformations during the preschool period. Investigators consistently have identified conflict over the possession of objects as the most frequent context in which aggressive behavior occurs for 3- to five-year-old children (Appel, 1942; Blurton-Jones, 1967; Buckley, 1975; Cairns, 1979c; Dawe, 1934; Jersild & Markey, 1935; Muste & Sharpe, 1947). The literature suggests that a significantly greater proportion of aggressive acts are "directed towards gaining possession of materials, toys, or equipment" (Appel, 1942, p. 87) than toward any other goal. The predominant function of aggressive behavior appears to be the achievement of non-aggressive goals. In spite of the recognized importance of the instrumental function of aggressive behavior and of the dispute over objects during the preschool period, there have been no valid investigations of the developmental patterns of instrumental aggressive behavior used to obtain an object from another.

Recent work (Shantz & Schomer, 1978; Spivack & Shure, 1974; Tedeschi, Smith, & Brown, 1974) suggests the importance of considering instrumental aggressive behavior as one category of interpersonal tactics or behavioral strategies by which a child can influence the behavior of a peer. If one wants to understand the use of aggressive behavior to obtain an object from a peer, then one must look also at the non-aggressive strategies employed by the child. The primary purpose of the proposed observational study is to provide descriptive data on the type of interpersonal

tactics used to obtain an object from a peer, and the developmental changes in the use of such tactics.

In the introduction of this paper, the following issues will be discussed: (a) sources of variance among observation scores of aggressive behavior which can invalidate the results of a study; (b) prior observational studies of aggressive behavior of preschool children; (c) the literature on children's interpersonal tactics; and (d) the purpose of this observational study. The selection of subjects, the setting and the procedure for observation of tactics, and the data collection and observational coding procedures will be elaborated in the methodology section of the paper.

Sources of Variance Among Observation Scores

In order to provide a foundation for reviewing the methodological problems of individual observational studies of aggressive behavior, some of the major sources of variance which can threaten the internal validity of an observational study designed to assess developmental changes in aggressive behavior shall be discussed first. This discussion also will illustrate those factors which need to be considered in the design of an observational study of developmental changes in the use of interpersonal tactics.

In order to feel confident that identified changes are a function of age-related variables, one must be certain that the amount of variance contributed by other sources is minimized or systematically controlled across age groups. Cairns and Green (1979) recently have published the following list of six major potential sources of variance among observation scores.

1. Characteristics of the observer:
 Selective attention factors;
 Limitations of perception;
 Personal biases toward subjects (halos);
 Biases toward groups (stereotyping).
2. Characteristics of the child--Stable:
 Enduring dispositions and style of interchange.
3. Characteristics of the child--Temporary:
 Fatigue, illness, momentary mood, etc.
4. Characteristics of the setting:
 Physical setting (classroom, home, etc.);
 Cultural or institutional setting.
5. Characteristics of the interchange:
 Behavior of the interchange partner;
 Relationship of the partner to the child (age, sex, past history, etc.).
6. Other sources of fluctuation:
 Errors of recording, mistakes in analysis, etc.

(p. 215)

Each of these potential sources of variance shall be discussed with regard to observation scores for aggressive behavior.

Characteristics of the Observer

When collecting observational data, one strives for data which are reliable; that is, data which an independent observer could reproduce in equivalent form. As Altmann (1974) notes, the extent to which observer biases exist in the data may be partially a function of the type of sampling

procedure which is utilized. The maximum amount of bias is likely to occur with "ad libitum sampling" (Altmann, 1974). An example of such a sampling procedure would be to ask an observer to record aggressive behavior whenever he sees such behavior occur within the group (for example, Dawe, 1931). Given this nonsystematic sampling procedure, there are several likely sources of bias in the data. Presumably, some forms of aggressive behavior will be more conspicuous than others, and therefore, be more likely to be noted (selective attention). Similarly, once the observer makes several records of aggressive behavior for a given child, he is likely to expect such behavior from that child and become sensitized to such behavior from that child in particular (halo). Altmann concludes that

with ad lib. sampling, it is rarely possible to determine which differences in the data are due to true differences between individuals, age-sex classes, or behaviors, and which are due merely to biases in sampling. . . . Without some form of systematic sampling procedure, there appears to be no way to avoid the bias that results when the observer's attention is attracted by certain types of behavior or certain classes of individuals. (p. 237)

While the use of a systematic sampling method such as "time sampling" presumably would reduce many of these biases, Altmann cautions investigators to remember that measures of frequency of behavior are not obtained through such sampling. When only the occurrence or non-occurrence of a behavior is scored during a given interval, it is not valid to make comparisons of frequencies of behaviors. A good example of this type of erroneous data analysis occurs in the observational study of affectional and aggressive behavior by Walters, Pearce, and Dahms (1957). In

order to obtain the least biased frequency data, Altmann recommends the use of a "focal" procedure in which "all occurrences of specified (inter)-actions of an individual, or specified group of individuals, are recorded during each sample period" (p. 242).

Although a "focal" sampling procedure considerably reduces the amount of bias among observational scores, Yarrow and Waxler (1979) demonstrate that considerable bias may still exist. Based on evaluation of several sets of data which were collected by a focal sampling procedure, they note that halo and stereotyping effects continue to exist in the data and produce considerable differences in interobserver agreement. For example, they found that the degree to which children initiated social contacts with peers differentially influenced the reliability of observations of the behaviors "helping another" and "receiving help from another." Interobserver correlations for the socially active group were .54 and .55, respectively, compared to .29 and .89 for the less active group (p. 57). They also report differential observer reliability scores for the measurement of aggressive behavior for boys and for girls ($r_s = +.76$ and $-.19$, respectively, p. 59). Although some of the observational studies of aggressive behavior have utilized interobserver agreement as a method for judging the reliability of their data, none of the studies have calculated separate measures for groups by age, sex, or socioeconomic status.

Characteristics of the Child--Stable

Within this category, the variable most pertinent to observational

studies of aggressive behavior is that of socioeconomic status. Numerous studies include data collected from children of quite different socioeconomic status. While some of these studies make comparisons between these groups, it is impossible to interpret the particular influence of socioeconomic status because other important differences exist between the groups (for example, setting characteristics). In two studies (McKee & Leader, 1955; Muste & Sharpe, 1947), however, children of different socioeconomic groups were observed in controlled free-play settings in order to reduce variance due to setting characteristics. In the study by Muste and Sharpe (1947), children aged 2 years 10 months to 5 years 4 months were observed in two experimental sessions in which the type of play materials varied. In addition to socioeconomic status, sex and age of partner also were independent variables. Although the data were coded according to specific categories of aggressive behavior, only mean scores for total aggression are reported. When collapsed across age and sex of partner, the mean scores suggest that boys and girls of middle socioeconomic status are more aggressive than boys and girls of lower socioeconomic status (no statistical analyses of the means are reported). Such a conclusion does not seem warranted, however, given the extreme differences between the groups in their overall activity level during the sessions. Lower socioeconomic status children are reported to have been so fearful and inhibited that they needed to be encouraged to touch the toys.

McKee and Leader (1955) avoid such confounds in their data by

preliminary exposure to the experimental setting several days prior to the observation. Their observational situation appeared to be more structured as two children, of the same age and sex, were seated at a table at which there were two separate piles of blocks and one construction in the middle. While their experimental design seems adequate, it is difficult to interpret their data. Although written protocols were made of the specific aggressive behaviors of the children, a 4-point rating scale of aggression was used as the dependent measure. Given the interrater reliability of $+.68$, one cannot feel confident of their results. In addition, there are no statistical analyses of the mean ratings. The reported means are as follows:

		<u>Low status</u>	<u>Middle status</u>
Three-year olds	Boys	1.75	.50
	Girls	.64	.40
Four-year olds	Boys	.75	.36
	Girls	.71	.40

(p. 141)

These means suggest that socioeconomic status does influence the frequency of aggressive behavior, with children of lower socioeconomic status being more aggressive. Further investigation of this variable is necessary, however, before any conclusive statements can be made.

Characteristics of the Child--Temporary

While the variance contributed by temporary factors such as illness

and mood presumably would be distributed randomly across age groups, this may not be true for factors such as fatigue. In order to be certain that group differences in obtained frequencies of aggressive behavior are not due to fatigue-related variables such as low activity level, then one needs systematically to vary the time of day during which aggressive behavior is sampled for each age group.

Characteristics of the Setting

Numerous studies have demonstrated that the type of setting in which children are placed influences their frequency of aggressive behavior (Cairns, 1979b; Feshbach, 1970; Houseman, 1972; Huston-Stein, Friedrich-Cofer, & Susman, 1977; Jersild & Markey, 1935; Patterson, Littman, & Bricker, 1967; Roff & Roff, 1940; Yarrow & Waxler, 1979). A recent observational study by Huston-Stein, Friedrich-Cofer, and Susman (1977) demonstrates that the amount of structure provided by the classroom teacher influences the output of aggressive behavior. "Teacher-led instruction" was used as the index for classroom structure. This was scored "whenever the child was participating in an activity that was directed toward a goal (e.g., making things, preacademic skills) and that was directed or led by an adult" (p. 910). Using a time sampling procedure, observers collected data on physical and verbal attacks on another as well as interference with activities. The results indicate that Head Start children from "highly structured" classrooms engaged in aggressive behavior for significantly fewer periods of time than did Head Start children from

less "structured" classrooms.

Although there was no observational measure of "structure" in Patterson, Littman, and Bricker's (1967) study of aggressive behavior in preschool children, they suggest that differences in structure primarily accounted for the large group difference in output of aggressive behavior.

It was our impression that the group output of assertive-aggressive behaviors was mainly a function of the differences in the program of activities characteristic of each school. For example, one of the teachers in School C (low output) was particularly effective in structuring the kind of interaction which took place. She frequently introduced play activities and games that provided discriminative stimuli for a wide variety of non-aggressive behaviors. She also seemed able to anticipate social settings in which aggressive behaviors were likely to occur, and by removing one or more of the children or introducing a new activity she decreased the probability of aggressive behaviors. (p. 19)

These observations suggest that the construct labelled "structure" is multidimensional, with the amount of "teacher-led instruction" being only one of a number of possible dimensions which might influence the occurrence of aggressive behavior. While none of the observational studies of developmental changes in aggressive behavior include specific measures of "structural" variables, they include several factors which may be indicative of "structural" differences between schools. For example, several investigators noted marked differences between groups in the teacher-child ratio (Appel, 1942; Body, 1955; Jersild & Markey, 1935; Muste & Sharpe, 1947). While a small teacher to child ratio does not ensure a high degree of supervision, a large teacher to child ratio precludes it. As Jersild and Markey (1935) note, mere teacher presence may reduce the amount of aggressive

behavior displayed as "children are less likely to initiate a conflict if the teacher is near" (p. 98). Marked differences between teachers also exist in the frequency with which they intervene in children's conflicts (Appel, 1942; Houseman, 1972; Jersild & Markey, 1935). In summary, teacher-related variables appear to introduce a large source of variance among observation scores of different groups.

Another setting characteristic which has been demonstrated to influence the frequency of aggressive behavior is whether children are observed at indoor or outdoor play activities. Numerous investigators have reported higher scores for aggressive behavior observed within an indoor setting than within an outdoor setting (Jersild & Markey, 1935; Patterson, Littman, & Bricker, 1967; Roff & Roff, 1940). Recent work by Houseman (1972) and Patterson (1976) also suggests that certain types of play activities within an indoor setting may be associated with higher frequencies of aggressive behavior than others. Although methodological problems with data collection and analyses prevent us from making conclusive statements about specific activities, these studies strongly suggest that the type of activity is another source of variance among observation scores of aggressive behavior.

In summary, there have been numerous demonstrations that the context in which aggressive behavior is observed can influence its frequency. As Feshbach (1970) notes, "A comparative study of aggression at different age levels requires the use of standard situations or environmental settings

in which the aggressive behaviors of varying ages can be observed" (p. 184). Unfortunately, the majority of observational studies of aggressive behavior neither use standard settings nor systematically control major setting variables across age groups. In addition, a number of studies confound setting variables with other influential variables such as socioeconomic status.

Characteristics of the Interchange

Because analysis of this type of variance is relatively recent, there are few studies which examine the influence of "partner variables" on the frequency of aggressive behavior of the target child. One of the earliest attempts to examine the influence of the age and the sex of the partner on the preschool child's aggressive behavior was the controlled observational study conducted by Muste and Sharpe (1947). Children were paired with partners who were either 3 months younger, 3 months older, or within 3 months of their age. Same sex and mixed sex dyads also were observed. Because Muste and Sharpe do not perform statistical analyses on their data, one can make only tentative conclusions. Their data suggest that the age of the partner influences the frequency of aggressive behavior of the target child. For example, "grabbing materials" accounted for 48.3% of the total aggression for children with same-aged partners but only 23.3% for children with younger partners. "Physical attacks" represented 15% of the aggressions for children paired with an older partner, but none of this behavior was reported for children with same-aged partners. Sex of the partner

appeared to be influential for girls but not for boys. Girls obtained a higher mean score when paired with boys than with girls.

Only recently have investigators begun to analyze the influence of specific actions by the partner on the target child's subsequent behavior. In such analyses, the unit for analysis becomes the "social interchange" in which "the acts of one individual contribute to the direction and control of the acts of another individual" (Cairns, 1979c, p. 3). In one of the earliest studies of social interchanges, Raush (1965) examined the differential influence of specific situations and antecedent behaviors of the partner on the occurrence of "friendly" and "unfriendly" acts. Subjects were 9- to 12-year-old boys who were in one of the following residential groups: hyper-aggressive American children in psychiatric treatment; well-adjusted American children hospitalized for several weeks; well-adjusted Norwegian children at a farm resort for several weeks. Using multivariate information analyses, Raush found that the

major determinant of the act was the immediately preceding act . . . For the three groups for which there were complete data (N = 6 per group), the results indicate that by classifying A's acts one can account for about 30% of the variance of B's immediately following behavior. (p. 492)

For 80% of the interchanges, recipients of "unfriendly" acts responded with "unfriendly" acts.

Reciprocal social influence also was demonstrated in Hall's (1973) controlled observational study of children playing with BoBo dolls. The correlation between nonpersonal aggressive acts (hitting, kicking, throwing

the BoBo doll, etc.) observed among 25 dyads was quite high ($r = +.82$) (from Cairns, 1979c, p. 224). Cairns notes that "if one member continually banged his BoBo doll into the other child's doll, his partner reciprocated with like behavior" (p. 225). In contrast to Raush's (1965) findings, Hall found that the reciprocal influence was not immediate. That is, although the behaviors of both members of a pair were quite similar, "a particular act was not necessarily predictive of the partner's immediate response" (Cairns, 1979c, p. 225). It is difficult to interpret this discrepancy. First of all, it is not clear whether Hall used similarly global categories such as "aggressive" versus "non-aggressive" or whether he looked at specific acts such as "hit." In either case, the discrepancy may be accounted for by the striking difference in the type of aggressive behavior which was observed in the two studies. Being the recipient of an aggressive attack by another child is quite different from having one's BoBo doll "attacked." Presumably, one's motivation to respond immediately with a counterattack would be considerably greater in the former situation.

In summary, there is evidence to suggest that partner variables such as age and sex influence the output of aggressive behavior by the target child. In the majority of observational studies of aggressive behavior of preschool children, neither these variables nor the specific behavior of the partner have been controlled. The influence of these variables will be considered further in the discussion of the methodology used by this investigator to study children's interpersonal tactics.

Review of Observational Studies of Aggressive Behavior

While data from many of the observational studies of aggressive behavior of preschool children contain several sources of variance other than age, these studies will be grouped according to that source of variance which primarily accounts for the study's low internal validity.

Characteristics of the Observer

Although Florence Goodenough's (1931) study, Anger in Young Children, was designed to provide a descriptive account of developmental changes in manifestations of anger, it shall be considered in this review as it frequently is cited as providing information about developmental changes in aggressive behavior. In fact, Feshbach (1970) asserts that this is "the most extensive, descriptive study of age changes in aggressive behaviors" (p. 186). The data, however, consist of samples of behavior in which "anger, rage or irritation" are manifested. The only form of aggressive behavior to be sampled was "retaliative" behavior which occurred during a display of anger. Therefore, these data represent a very biased sampling of aggressive behaviors.

Unfortunately, numerous problems with the sampling procedures prevent one from obtaining any conclusive information about developmental changes in manifestations of anger. For example, the observers (mothers) were given no behavioral criteria by which to judge the occurrence of "anger, rage or irritation." Secondly, the use of Ad Libitum sampling procedures without an independent check on the reliability of the data

precludes confidence in the results. Goodenough acknowledges that the observational records often seemed incomplete, and that the recorders tended to focus on the most conspicuous behavior. In summarizing the limitations of her sampling procedure, she asserts "that it has not seemed wise to us to present a detailed quantitative analysis of the facts as they appear on the records" (p. 52). She proceeds to make quantitative comparisons of frequencies of behaviors by age and sex groups, however.

In addition to the biases introduced by sampling procedures, additional bias is contributed by unequal representation of children within the sample. The number of hours of observation of a given child varied from 64 to 1,689. The limited sample size also precludes conclusive statements about developmental changes in anger manifestation (N ranges from one to seven per cell). In summary, there are too many biases within the data to allow one to feel confident in making conclusive statements about age changes in the manifestations of anger, much less aggressive behavior.

Another study which often is cited as an important source of descriptive information about age changes in aggressive behavior is Dawe's (1934) study on the analysis of "quarrels" of preschool children. There are several problems with the interpretation of her results. Because the term "quarrel" is never defined, it is unclear whether her data also include non-aggressive disputes. The use of an Ad Libitum sampling procedure, however, presents the primary difficulty in interpretation of the results.

In order to view the group (forty children) as a whole, the observer watched the children from some central spot on the playground or from

the doorway between the two main playrooms. When a quarrel developed the observer moved quickly to the scene of action as unobtrusively as possible. (p. 142)

Although Dawe maintains that her data are reliable, independent records were made of only 10 of 200 quarrels. Given the type of sampling procedure, one cannot feel confident that the reported age and sex differences are due to true differences between these groups rather than biases in the sampling of behaviors. It is important to note also that the children in each group ranged in age from 25 to 60 months. Over 60% of the observed quarrels consisted of children who differed in age by at least 6 months. The extent to which children played with same-aged peers differed according to the age of the child. Therefore, lack of control over the age of the child's partner in the quarrel introduces another likely source of variance among the data which does not appear to be distributed equally across age groups.

Stable Characteristics of the Child; Characteristics of the Setting

In many of the studies conducted several decades ago, group differences in socioeconomic status co-exist with major differences in the settings in which the data for each group were collected. In this section, those studies whose results appear to be invalid because of such co-existing biases shall be reviewed.

Perhaps the most extensive observational study of naturally occurring aggressive behavior in preschool children is the study conducted by Jersild and Markey (1935). In their classic study, observers used a focal-individual sampling procedure to collect descriptive data on peer interaction

during conflicts which were aggressive in nature. Although rich, detailed categories were used to organize their data initially, such meaningful distinctions are eliminated in the presentation of their results. Aggressive and non-aggressive behaviors of the same molar form are collapsed into a single category. Therefore, the category "Verbal demands, etc." includes verbalizations as varied as verbal aggression, claims of ownership, and prosocial conflict resolution attempts. Given such categories, one cannot gain any descriptive information about developmental changes in the form or function of aggressive behaviors.

A critical investigation of the data indicates that comparisons between age groups are invalid for any variables. Data were collected within three preschools which differ on a number of important dimensions. Table 1 was constructed in order to illustrate the potential sources of variance in their data. When comparisons of the average frequency of conflicts per group were made, significant differences were found (Group C > Group A > Group B). When children were matched for sex and approximate age (N = 7 pairs), no differences were found between Group A and Group C for 2- to 3-year-old children. When 3- to 4-year olds from Group B and Group C were compared, however, Group C exhibited twice as many conflicts. Because different groups are compared at the two age levels, one cannot determine whether there is a group by age interaction effect. It is clear, however, that the "Group" factor contributes a major source of variance among observation scores.

Table 1
Potential Sources of Variance in Jersild and
Markey's Data^a

Sources of variance	Schools		
	A	B	C
Socioeconomic status	Middle	Middle	Lower
Age range of children (months)	22-36	33-50	26-48
Average age of children (months)	29.1	42.7	38.3
Teacher to child ratio	4:16	5:17	2:17
Amount of play space	Limited	Large	Limited
Percentage of males	62%	68%	29%
Percentage of females	38%	32%	71%

^aAdapted from various tables, Jersild and Markey (1935).

In order to attribute differences in scores to age-related variables, one would need to be certain that each group was represented equally across age groups. In Jersild and Markey's study, there is considerable variation in the amount of data contributed by each "group" across ages (see Table 2). In addition, the number of observations per child appears to vary markedly (see Table 2). In summary, Jersild and Markey's data contain too many alternate sources of variance to allow valid age-group comparisons.

Another extensive study whose purpose was to provide descriptive information about the "concrete manifestations of aggressiveness, motives that underlie it, and functions that it serves in the life of the individual child" (p. 185) was conducted by Appel (1942). In addition to the biases introduced by Ad Libitum sampling procedures, large sources of variance in the data presumably result from the use of 14 different nursery schools for data collection. As in the Jersild and Markey (1935) study, children were segregated by socioeconomic status. In addition, Appel's sample includes children who differ in race (Black, White). Differences between the setting characteristics of the schools are not reported extensively. Those noted, however, include differences in the size of the class, the amount of play equipment, and the amount of teacher intervention in conflicts. In addition, Appel comments that "records were taken when the children were engaged in various activities on the out-door playground, or in the indoor school rooms" (p. 186). There was no systematic control for the type of activity (indoor-outdoor play) or for the time of day during which

Table 2
Contribution of Data by Groups A, B, and C^a

		Ages of children (months)					
		18-23	24-29	30-35	36-41	42-47	48-53
Group A	N (children)	4	14	15	2	0	0
	N (observations)	14	79	68	9	0	0
Group B	N (children)	0	0	3	15	16	6
	N (observations)	0	0	12	72	71	35
Group C	N (children)	0	6	11	5	13	1
	N (observations)	0	27	52	21	72	8

^aAdapted from Jersild and Markey, 1935, p. 59.

observations were made. Apparently, there also was no systematic control for the representative sampling of each school across age groups. Because of the numerous sources of bias in the observation scores, one cannot accept with confidence Appel's conclusions about developmental changes in aggressive behavior.

In summary, a critical review of the early observational studies has yielded very little information about the developmental course of aggressive behavior. This literature, however, does suggest a focus for future investigation of the developmental patterns of aggressive behavior for children ages 3 to 6. Early investigators consistently have identified conflict over the possession of objects as the most frequent context in which aggressive behavior occurs for children during the preschool years (Appel, 1942; Dawe, 1934; Jersild & Markey, 1935; Muste & Sharpe, 1947). More recent observational studies (Bonner, 1976; Buckley, 1975) and clinical observations (Blurton-Jones, 1967; Cairns, 1979c) also support their findings. Appel's (1942) data indicate that, for preschool children, a significantly greater proportion of aggressive acts are "directed towards gaining possession of materials, toys, or equipment" (p. 87) than toward any other goal.

The use of aggressive behavior to obtain possession of an object has been labelled as "instrumental" aggression by Feshbach (1964, 1970). In contrast to "hostile" aggression "for which the goal is injury to some object" (Feshbach, 1970, p. 161), "instrumental" aggression is considered to be one of many possible means by which to achieve a non-aggressive

goal. While Feshbach and others acknowledge that such a distinction is not always clear, they argue that this typology provides a useful framework for examining the functional properties of aggression. Hartup (1974) asserts that "the developmental course of human aggression may be best understood by means of a differentiated 'functional analysis' of the problem" (p. 340).

Using this type of a framework to categorize his data, Hartup (1974) conducted a naturalistic observational study of the aggressive behavior of six groups of children of lower socioeconomic status who varied in sex, age, and race. These six groups, all members of the same school program, are reported to operate under a common philosophy and to have similar ecological settings, including classroom structure. However, the author neither used formal measures for assessment nor provides the reader with any specific information about setting characteristics. Hartup also reports very little information regarding his data collection procedures. Using a "combination of time and event sampling procedures" (p. 339), observers made narrative recordings of the context in which the aggressive event occurred and the subsequent peer interaction. Because no measure of observer reliability is reported, it is not possible to assess the reliability of the data.

Classification of aggressive events as either "hostile" or "instrumental" provided the primary data for Hartup's analyses. Unfortunately, he does not describe the criteria by which such judgments were made. Throughout the article, he repeatedly refers to "hostile" aggression as "person-oriented" and to "instrumental" aggression as "object-oriented."

It is unclear whether the criterion for classification was the object on which the aggression was focused, or the apparent goal of the act. Hartup reports an overall coder agreement of 92%. In considering the results of his data analyses, it also is important to note that only the first aggressive act within an interchange was included in the analyses. Given all of these limitations, one must regard his results as suggestive rather than conclusive.

Because Hartup apparently pooled data for children aged 4 to 6, it is not possible to obtain information about the developmental course of aggressive behavior during the preschool period. Rather, comparisons are made between the preschool period and the first grade level (ages 6 to 7). His findings suggest that first grade children are less aggressive, overall, than preschool children ($p = .03$, p. 339). This difference is reported to be comparable for both sexes. A significant Race x Age interaction ($p = .04$) suggests that the rate of aggression does not differ for black and white children during the preschool period but that older black children are significantly more aggressive than older white children. "This age difference in total aggression derives primarily from an age difference in the rate of occurrence of instrumental aggression" ($p = .004$, p. 339). This is also the source of the Race x Age interaction ($p = .007$) for total aggression. No significant main effects or interaction effects are reported for the rate of occurrence of hostile aggression.

Similar developmental patterns were obtained in a naturalistic observational study (Bonner, 1976) of white, middle-class kindergarten through

third grade children. Using a focal individual sampling procedure primarily, observers made "narrative recordings of the context and the content of each situation" (p. 35) in which the target child was involved. Children were observed in a standard situation, the recess period. It is unclear whether the data are highly reliable as Bonner notes only that "the overall percentage agreement for three observation periods (of nine) was 84%" (p. 38). He does not specify which units provided the bases for calculation of observer agreement. In classifying acts as either hostile or instrumental, Bonner notes that the "apparent function of the act" (p. 56) was used as a criterion.

Analysis of variance of the total aggression scores did not yield any significant effects. When physical and verbal aggressive behaviors were analyzed separately, the results indicated that there was a significant decrease with age in the use of physical aggression only. Older children demonstrated significantly less instrumental aggression than younger children. No significant age differences were found for the frequency of occurrence of hostile aggression. When aggressive acts were classified according to their specific function (aversive interference, blame or tattletale, bodily injury, defiant noncompliance, derogation, destruction of property, interpersonal rejection, threat, usurp or regain object), significant age differences were found only for the category "usurp or regain objects, space or activity." There was a significant decrease with age in the use of aggressive behavior to obtain objects from peers. It also was noted that, across

age groups, aggressive behavior was used more often for this purpose than any other (p. 63).

A decrease in the use of aggressive behavior to obtain the possession of an object also is reported by Hapkiewicz (1974) in his study of 6- to 9-year olds. In order to reduce the biases inherent in observation of different age groups in different settings, Hapkiewicz devised an ingenious controlled situation in which to observe instrumental aggressive behavior. Same-sex, familiar pairs of children were observed in a room in which a movie was shown inside of a box which had only one hole for viewing. The majority of aggressive behavior which occurred during the observations consisted of "pushing." For boys of middle socioeconomic status, the total mean aggression score markedly declined from the first to the second grade. This decline did not occur for boys of lower socioeconomic status until the third grade. Changes in the rate of aggressive behavior for girls was much less marked.

In summary, recent observational studies (Bonner, 1976; Hapkiewicz, 1974; Hartup, 1974) consistently report a significant decrease in the use of instrumental aggressive behavior for post-preschool aged children. Specifically, the use of aggressive behavior to gain possession of an object has been shown to decrease from age 6 to age 9 (Bonner, 1976; Hapkiewicz, 1974). There have been no valid investigations of the developmental course of instrumental aggressive behaviors during the preschool years, however.

Instrumental Aggression as an Interpersonal Tactic

The primary goal of this study is to provide descriptive information about the developmental course of instrumental aggression during the pre-school period. Using prior investigations as a model, an observational study could have been conducted in which occurrences of instrumental aggressive behavior were recorded in detail. Within- and between-group comparisons of the frequencies of different forms of aggressive behavior then could have been made. While this type of approach would have provided useful information, it would have ignored important aspects of the conceptualization of aggressive behavior as instrumental. By definition as an instrumental act, aggressive behavior is only one of a number of alternative acts which can be used to achieve a non-aggressive goal. For example:

A 4-year old may want to play with an attractive toy which a peer refuses to relinquish. He can negotiate and offer the other child a positive exchange (e.g., candy, another toy), he can resort to help from authority by asking the nursery school teacher to intervene, he can also urge, cry and engage in a number of other responses including hitting the peer. The goal in the situation is the toy rather than hurting the other child. (Feshbach, 1970, p. 161)

Other investigators (Krasnor & Rubin, 1978; Patterson, 1975; Shantz & Schomer, 1978; Spivack & Shure, 1974; Tedeschi, Smith, & Brown, 1974) also have stressed the importance of viewing instrumental aggressive behavior as one type of "interpersonal tactic" by which a person can "get the other to think, feel or do what they want them to" (Weinstein, 1969, p. 753). If one wants to understand the use of aggressive behavior to obtain an object from a peer, then it is necessary to look also at the non-aggressive strategies employed by the child in that context. Instrumental

aggressive behavior must be considered in relation to the child's repertoire of non-aggressive interpersonal tactics.

Although extensive training programs have been developed to improve interpersonal competence and social adjustment of preschool children by improving their ability to generate cognitively a large number of interpersonal tactics (Shure & Spivack, 1975; Spivack & Shure, 1974), there is very little information about the tactics which children actually use. The majority of the studies which have investigated children's interpersonal tactics have utilized cognitively generated responses to hypothetical situations as their data (Alvy, 1973; Brenneis & Lein, 1977; Clark & Delia, 1976; Finley & Humphreys, 1974; Flavell, Botkin, Fry, Wright, & Jarvis, 1968; Shure & Spivack, 1970, 1975; Shure, Spivack, & Jaeger, 1971; Spivack & Shure, 1974). A recent study by Krasnor and Rubin (1978) clearly demonstrates that there is little correspondence between the interpersonal tactics generated by children in the hypothetical test situations and the tactics which they actually employ in comparable real-life social situations.

Krasnor and Rubin found that when they asked preschool children what they would do to try to get a toy from a peer, the children responded with some type of a verbal strategy over 70% of the time. In peer interactions involving attempted acquisition of a toy, however, only 46% of the observed strategies were verbalizations. For example, many children offered the strategy "say please" in the hypothetical situation. Throughout the observations, however, "please" was not heard even once. When responses of

specific children were considered, Krasnor and Rubin found that the probability that a child would use the alternative that he had offered in the hypothetical situation was only .26. "In short, it was very difficult to predict a child's social behaviour given his/her responses to an interview test" (p. 13). In describing those strategies which the children did use to try to obtain a toy from a peer, they note that one-third of the strategies consisted of some type of force on the object, while almost one-half were some type of verbalization. Physical aggression directed toward a peer was "relatively rare" in occurrence. In terms of the success rates of various strategies, the use of force on an object or force on a person was successful one-half the time. Verbalizations were successful 40% of the time.

A recent study by Gottman and Parkhurst (1978) investigated the effectiveness of four types of verbal strategies in eliciting "compliance" from a peer: (a) imperatives or demands; (b) expressions of needs, wants, or feelings; (c) an expression of a plan that involves both; and (d) a polite suggestion (i.e. "Do you wanna play Superman and Wonder Woman?") (p. 49). Data were collected by audiotape recorders in the homes of 13 children whose mean age was 4 years (SD = 10.7 months). The effectiveness of each type of tactic was assessed empirically by calculating the proportion of times in which compliance was elicited from the peer. Children who were less than 5 years of age were compared to children aged 5 or older. Imperatives and expressions of needs were found to be more effective among younger friends than among older friends. Suggestion of a plan involving

both children was less effective among younger than older friends. "Across age and levels of acquaintanceship (friends, strangers), polite suggestions stated as questions are the most effective control tactic" (p. 50).

In summary, the observational literature on children's use of interpersonal tactics indicates that verbal strategies are used more frequently than are physical strategies, within the context of disputes over objects. Gottman and Parkhurst's (1978) data suggest that there may be developmental differences in effectiveness, as well as in frequency, of particular types of verbal strategies.

The Purpose of the Study

A critical review of the observational studies designed to provide descriptive data about developmental changes in aggressive behavior during the preschool period indicates that there are too many sources of variance among scores to allow one to feel confident that the results are a function of age-related variables. These studies, however, do provide a focus for future developmental investigations of aggressive behavior. Investigators consistently have identified conflict over the possession of objects as the most frequent context in which aggressive behavior occurs for 3- to 5-year-old children (Appel, 1942; Blurton-Jones, 1967; Buckley, 1975; Cairns, 1979c; Dawe, 1934; Jersild & Markey, 1935; Muste & Sharpe, 1947). The predominant function of aggressive behavior appears to be the achievement of non-aggressive goals (i.e. to gain the possession of objects). Recent work suggests the importance of considering instrumental aggressive

behavior as one category of interpersonal tactics by which a child can influence the behavior of a peer. If one wants to understand the use of aggressive behavior to achieve non-aggressive goals such as obtaining an object from a peer, then it is necessary to look also at the non-aggressive strategies used by the child.

The primary purpose of this observational study is to provide descriptive data on the types of interpersonal tactics used to obtain an object from a peer, and the developmental changes in the use of such tactics. The influence of the child's prior strategies on subsequent ones (within-individual sequential analyses) also are considered.

METHODOLOGY

The Selection of Subjects

The social interchange which occurs between the child who solicits an object and the child who possesses that object was chosen as the primary unit of interest in this study. As discussed in the Introduction, a review of the observational literature on aggressive behavior demonstrated that several characteristics other than age could influence the frequency of aggressive behavior exhibited by the solicitor. These variables were identified as: the sex of the target child (the solicitor), the sex and the age of the child's partner (the possessor), the race of the child, and the socioeconomic status of the child's family. In order to increase the precision of the study of age effects and to maximize the sample size, these variables were held constant in the subject population. The age of the children constitutes the only independent variable. White male children were paired with familiar white male peers of similar age. Only children whose families were at least of middle socioeconomic status were used. This level of socioeconomic status was chosen because it appears to include a larger proportion of the population than the upper socioeconomic status group, and pilot observations indicated that it allows for utilization of a wider range of strategies than the lower socioeconomic status group. The age criteria of 36-42 months

(Threes) and 60-71 months (Fives) were chosen in order to maximize developmental differences in the sample but still ensure development of basic language skills and intelligible articulation. Subjects were selected from morning as well as full day program classrooms. Data were collected for 20 dyads per age group.

The subject population was recruited in the following manner. A letter (Appendix A) was sent first to the directors of all preschool programs for 3- to 5-year olds in the Durham area whose hours of operation are limited to the morning. Such programs were chosen as an attempt to restrict the population to children of at least middle socioeconomic status. Following this letter of introduction, the investigator contacted each director to discuss the project further. If the director agreed to the proposed procedure, a letter was sent to the parents which explained the basic purpose of the study and requested permission for their child to be videotaped (see Appendices B and C).¹ As an additional check on the socioeconomic status of the child, the maximum level of education attained by each parent was obtained. While it is recognized that this is not a measure of socioeconomic status per se, it is felt that the educational level of the parents is the most meaningful index of those parental variables which might influence the types of interpersonal tactics utilized by the child. The subject population was limited to

¹Appendix C contains a revised form of the letter which was sent to parents. Although parental response was favorable for morning programs, one of the day program directors advised revision of the letter to ensure that parents understood that their child was not being labelled aggressive.

children from families in which at least one parent had some college training.

Although each of the six morning preschool programs which were contacted agreed to participate in the study and parental permission was very high (approximately 85%), it only was possible to collect approximately one-half of the data from these programs. This was due primarily to the small size of the classroom groups, the narrow age criteria and some absenteeism. In order to collect the remaining data, six full day preschool programs in Durham, Cary, and Raleigh also were utilized. Similar procedures were followed with these programs. Table 3 lists the distribution of dyads by age group and type of preschool program.

The Setting and the Procedure for Observation of the Use of Interpersonal Tactics to Gain Possession of An Object

The Setting

The review of the literature demonstrated that the context in which aggressive behavior is observed significantly influences its frequency. Specific variables which were identified were the amount and the type of teacher-direction and intervention. Extensive preliminary observations during free play periods confirmed the findings of prior investigators (Appel, 1942; Huston-Stein et al., 1977; Patterson et al., 1967) that the amount and the quality of teacher-imposed structure and intervention during conflicts over possessions varies considerably within and between age groups. In addition, there are classroom differences in access to specific

Table 3

Distribution of Dyads by Age and Type of School Program

Age range	Type of program	
	Morning	All day
36- <u>42</u> months ($\bar{X}$ = 39.12, S. D. = 1.97)	8	12
62- <u>71</u> months ($\bar{X}$ = 66.08, S. D. = 2.61)	10	10

types of objects. Research findings and preliminary observational data indicate that a controlled observational procedure within the school setting provides data which are both ecologically and internally valid.

The controlled observational setting for this study involved the placement of a male dyad at a table on which there was a novel, attractive object which can be used by only one child. The object chosen was a Star Trek spaceship which is extended by a cable from a base.¹ The control box can be used to vary the speed and the direction of its flight. This object was chosen after extensive pilot testing of several objects. This object has a very high interest value for both age groups and also is easily manipulated. In order to eliminate the possibility of joint use of the object, the spacecraft was enclosed in a plexiglas cube with the control box placed outside. The lever which controls the direction of flight was taped so that only one lever (the accelerator) was accessible.

Initially, it was planned to conduct the controlled observation within the preschool classroom. Extensive pilot testing, however, indicated that it is quite difficult to restrict the number of children who compete for the use of the object. Although only two children are given permission to use the object, its interest value is so high that other children come to the table and actively solicit the use of the spacecraft. Through discussion with preschool teachers and directors, it was decided to conduct the controlled observation in a spare room within the school in which no other children

¹The spaceship was manufactured by Remco.

would be present. While the room varied across preschools, it was arranged so that no other play objects were available to the children. The table was placed so that the children's backs were visible from the doorway.

The Procedure

The teacher was told that the purpose of the project is to document the strategies which children use to obtain objects from their peers, and the procedure was explained to her.

Prior to taking the children from the classroom, the investigator visited within the classroom in order to familiarize the children with her. The teacher was asked to introduce the investigator to the children and to explain to them that she would be visiting for several days. Once the children were familiar with the investigator, the teacher explained the procedure in the following manner:

Mrs. Buckley has brought a surprise toy for you to play with today. It's very special, and I think that you will really like it. Now I know that all of you will want a chance to play with it, but Mrs. Buckley can only take two children to play at a time. She's going to take you to the _____ (description of the room). Those children who don't get to go with her today will get to go on another day. Mrs. Buckley will let you know when it's time for you to go to play with the toy.

Children were paired only with a familiar peer from their classroom. The children had been together in their classroom for at least 6 months.¹ Within the classroom, assignment of partners was made on the basis of age. The age of each male in the classroom was calculated. Children only were

¹The data were collected from March until June. Classrooms had been meeting since the previous September.

paired with those who were within 3 months of their age. When more than one child met this criterion, the children were paired together randomly. Usually only the investigator escorted the children to the controlled observational setting. On the occasions when 3-year-old boys were reluctant, however, their teacher also accompanied them. Once there, all of the boys expressed a desire to remain to play with the object. The object was introduced to the pair of boys in the following manner:

(As the room is entered) Come see what I brought for you boys to play with! See-- it's a spaceship! It's real fun. You know what it can do? It can fly. Watch how to make it fly. If you push this up (point to the accelerator lever), it makes it fly. (Push lever up and the spaceship flies) Pretty neat, huh? You can make it slow down, too, like a car. Watch. Push this back (pull lever back), and it goes slow. Want to see it land? Watch how to make it land. Push this all the way back (demonstration), and it will land. See. This part is broken (point to the lever which is taped). Watch again how to make it fly. (Demonstrate again how to make it take off, accelerate, and land) Would you boys like to play with this for a little while? O.K. I'll be out in the hall doing some work. You boys can play with this for awhile. I'll come back in to get you when it's time to go back to your classroom.

In order to ensure adequate supervision of the children, the investigator observed them through the window in the door. In those few cases where there was not a window, the door was left ajar. Because the children's backs were to the door, it was possible to observe unobtrusively. While the investigator was ready to intervene if any child was in danger of being harmed, it never was necessary to do so. On the three occasions when a child told the investigator that the possessor would not allow him to use the object, the child was told to try to resolve the dispute on his own.

The observational period was terminated at the end of 9 minutes.

Preliminary observations suggested that most of the dyads would exchange the object within the first 2 minutes of the interaction. Nine minutes was chosen because it seemed to be a sufficient length of time to capture the process of exchange which evolved between the dyads but was not long enough for the children to become disinterested in the object. Three-year olds demonstrated a much shorter attention span than 5-year olds.

If the solicitor had not obtained the object from the possessor by the end of 6 minutes (two dyads), then the investigator intervened in the following manner to facilitate an object exchange:

I just wanted to let you know that we'll have to go back to the classroom in a few minutes.

If an object exchange had not yet occurred by the end of 7 minutes (two dyads), then the investigator stated "Just one more minute to play." For the one dyad where an object exchange did not occur by the end of 9 minutes, the child was allowed to play with the object before returning to the classroom. If the teacher agreed, other children in the classroom also were allowed to play briefly with the object.

The Data Collection

Portable video equipment was used to record the dyadic interchange. Preliminary observations indicated that video equipment is superior to human observers as it is less intrusive. Data collection by human observers appears to result in interactions which are more heavily biased in the direction of social desirability. Videotaped records also allow a more

sophisticated coding scheme than one could apply through live observational coding.

The Observational Coding Procedure

A transcription was made of each videotaped record of a 9-minute dyadic interaction. There were several basic units of transcription. Each 9-minute observation consisted of at least one "object transaction interchange." The onset of a particular object transaction interchange occurred when one member of the dyad gained sole possession of the object, thereby leaving the other member of the dyad to solicit the object. This particular object transaction interchange continued until the solicitor was successful in obtaining possession of the object. The exchange of the possession of the object therefore marked the end of that object transaction interchange and the beginning of another one.¹ During most of the interactions, members of the dyad alternated roles as "solicitor" and "possessor" of the object.

Within each object transaction interchange, there were two basic units of transcription: (a) those behaviors which the solicitor utilized to obtain possession of the object (solicitations), and (b) those behaviors which the possessor utilized to control possession of the object (possessor-responses). The transcripts consisted of sequential records of a series of object transaction interchanges, each of which was composed of a series of solicitor's behavior--possessor's response. Behaviors which clearly were

¹In one dyad, the solicitor never gained possession of the object.

neither solicitations nor relevant possessor-responses were summarized rather than transcribed verbatim (i.e. descriptions of the object, discussions of how it works). Whenever there was uncertainty as to whether the behavior(s) were one of the solicitations or possessor-responses to be coded, the behaviors were transcribed verbatim. Behaviors were transcribed as distinct if their occurrence was separated by a discernible pause. Otherwise they were transcribed as a single unit. A digital stopwatch was used to record the time at which each object exchange occurred as well as to mark the end of the observational period. Other time values which were recorded were: the length of time elapsed between a solicitation and the subsequent possessor's response; the duration of extended physical struggle between the children; the length of time elapsed between the prior solicitation and the object exchange. These values were recorded in order to differentiate between coding categories.

The coding system for these data was developed prior to data collection. The categories which were used to code the specific types of solicitations and possessor-responses were derived from extensive preliminary observations of object transactions between children in naturally occurring and controlled settings. The final categories were derived by discussions between two persons who independently had coded an extensive sample of the pilot observations. An additional check was made by consulting the codes used by investigators to categorize cognitively generated interpersonal tactics (Brenneis & Lein, 1977; Clark & Delia, 1976; Finley & Humphreys,

1974; Flavell, Botkin, Fry, Wright, & Jarvis, 1968; Shure & Spivack, 1975). (See Appendix D for a listing of the solicitation codes. See Appendix E for a listing of the possessor-response codes.)

In order to provide a framework for conceptualizing children's solicitations and to provide a mechanism for collapsing categories for data analyses, a multi-level structure was derived prior to data collection which organizes the codes by dimensions of influence (see Table 4). Solicitations are considered to be of two types: basic and elaborated. Basic solicitations are "neutral" bids for the object in which the child simply states, in some form or another, that he wants to use the object but does not try to persuade the other. In contrast, elaborate solicitations are bids for the object which incorporate some type of persuasive element by which the child tries to influence the peer to give him the object. The following dimensions of influence have been identified:

1. Focus on the other's interest in the object;
2. Focus on one's affective response to lack of possession of the object;
3. Focus on disguising the solicitation, outwitting the other;
4. Focus on appeal to principles of sharing, turn-taking, etc.;
5. Focus on the negative consequences for the other of lack of compliance.

These dimensions and their correspondent codes are more fully elaborated in Table 4.

A multi-level structure also was derived prior to data collection

Table 4
Solicitation Code Structure

Basic solicitations

- a. Solicitation is a direct bid for the use of the object.
 - Directs other, positive
 - Requests other
 - Expresses need, desire to other
- b. Solicitation is an indirect bid for the use of the object.
 - Directs other, negative
 - Requests other, indirect
 - Directs other, unspecific

Elaborate solicitations

- A. Focus on other's interest in the object^a
 - I.^b a. Solicitation is limited or altered to become more acceptable, to mitigate the loss of the object for the other.
 - Refers to future use of object
 - Refers to limited use of object
 - Promises to return object
 - II. b. Solicitation incorporates some type of an advantage to the other in relinquishing the object.
 - Offers assistance
 - Ingratiates other, material
 - Ingratiates other, interpersonal - verbal
 - Ingratiates other, interpersonal - physical
- B. Focus on one's affective response to lack of possession of object
 - a. Solicitation focuses on the solicitor's positive desire for the object.
 - Expresses elaborated desire

Table 4 (continued)

-
- I. b. Solicitation focuses on the solicitor's negative affective state (anger excluded) due to lack of possession of the object through tone of voice and/or facial expression.
 - Solicitations stated in a distressed tone of voice
 - Looks distressed
 - II. c. Solicitation focuses on the solicitor's negative affective state (anger excluded) through more intense vocalizations and verbalizations.
 - Laments
 - Cries, whines
 - C. Focus on disguising the solicitation, outwitting the other
 - I. a. Solicitation incorporates creativity, cleverness to persuade other to relinquish the object.
 - Distracts other
 - Proposes fantasy
 - II. b. Solicitation incorporates dishonesty, deception to persuade other to relinquish the object.
 - Tricks other
 - D. Focus on appeal to principles
 - I. a. Solicitation includes an indirect reference to the rules or principles to which friends should adhere.
 - Implies friendship obligation
 - b. Solicitation makes an indirect reference to the principle of sharing, turn-taking.
 - Asserts right to use
 - Expresses inequity
 - Implies obligation to reciprocate
 - Implies obligation to share, take turns
 - Evaluates other's actions

Table 4 (continued)

-
- II. c. Solicitation makes a direct appeal to the principle of friendship obligation.
- Invokes rule of friendship obligation
- d. Solicitation makes a direct appeal to the principle of sharing, turn-taking.
- Invokes rule of sharing, turn-taking
Invokes adult-imposed rule of sharing, turn-taking
States violation of sharing, turn-taking
Invokes rule of reciprocity
Proposes sharing
- e. Solicitation makes an appeal to the principle of "Equal-action" in turn-taking and sharing.^c
- States or refers to rule
Keeps, argues score
- E. Focus on negative consequences of noncompliance for the other, verbal
- I. a. Solicitation implies the threat of negative consequences
- Solicitations stated in an angry, insistent tone
- II. b. Solicitation threatens negative consequences, non-bodily harm
- Threatens personal rejection
Threatens appeal to authority
Threatens negative reciprocity
Threatens to take object
- III. c. Solicitation threatens negative consequences, bodily harm
- Threatens to attack other

Table 4 (continued)

d.		Solicitation incorporates negative consequences for other
		Rejects, derogates other Appeals to authority
F.		<u>Focus on negative consequences of noncompliance for the other, physical</u>
I.	a.	Solicitation implies the threat of negative consequences
		Glares, scowls at other
II.	b.	Solicitation threatens negative consequences, non-bodily harm
		Gestures to take object
III.	c.	Solicitation threatens negative consequences, bodily harm
		Gestures to attack
		d. Solicitation incorporates negative consequences, non-bodily harm
		Takes object
IV.	e.	Solicitation incorporates negative consequences, bodily harm
		Attacks other Struggles

Note. All solicitation codes can be categorized according to this structure except the codes "Please" and "Refers to status."

^aAdapted from Clark and Delia, 1976.

^bDenotes levels within the dimension which indicate degrees of intensity.

^cTerm originally defined by Damon, 1977.

which organizes the possessor-response codes. These levels and their correspondent codes are listed in Table 5 with Appendix E giving definitions of the individual codes.

After the investigator made transcriptions of each videotaped record, she then coded the transcriptions using the coding system just described. For each age group, five videotaped records were randomly selected to be viewed independently by a second person. Transcripts were made of these 10 tapes by the second person who then applied the coding system. These transcripts and their correspondent codes were compared to those done by the investigator and observer reliability measures were calculated. This will be discussed further in the results section.

Table 5

Possessor-Response Code Structure

Object exchange

- a. Possessor relinquishes possession of the object within 10 seconds of a solicitation.

Complies - relinquishes possession

- b. Possessor relinquishes possession of the object after more than 10 seconds have elapsed from the prior solicitation.

Unsolicited - relinquishes possession

No object exchange

- A. Possessor does not acknowledge the solicitation.

Does not acknowledge

- B. Possessor acknowledges other's right to possession.

Confirms right to use
Proposes sharing
Solicits continued use

- C. Possessor forestalls other's possession of the object.

- a. Possessor delays other.

Imposes delay - general
Imposes delay - fantasy

- b. Possessor distracts other.

Distracts

- D. Possessor simply refuses to relinquish possession.

Verbally refuses
Verbally refuses with account

Table 5 (continued)

-
- E. Possessor incorporates an appeal to principle in his refusal to relinquish possession of the object.
- a. Possessor appeals to principle of general equity.
 - Expresses inequity
 - Asserts right to turn
 - b. Possessor appeals to principle of equality in turn-taking.
 - Refers to rule of equality
 - Keeps, argues score
- F. Possessor incorporates negative consequences in his refusal to relinquish possession of the object.
- a. Possessor verbalizes negative consequences.
 - Derogates other
 - Threatens appeal to authority
 - b. Possessor physically expresses negative consequences.
 - Attacks other
 - Struggles
- G. Possessor allows the solicitor some control of the object.
- Solicits other's indirect control
 - Allows other simultaneous use
- H. Possessor refers to violation of rules for appropriate solicitation of objects.
- Evaluates other's actions
 - States rule or rule violation
-

RESULTS

The primary purpose of this study is to provide descriptive information about the types of interpersonal tactics which children use to solicit an object from a peer, and to investigate developmental changes in the use of these tactics. In addition, we are interested in the influence of the solicitor's prior attempts on his subsequent tactics, as well as the possessor's response to these solicitations. Two basic levels of analyses were used: category profiles and within-individual sequences.

Observer Reliability

Percentage agreement scores were calculated for each age group in order to test the reliability of the data. Percentage agreement was calculated as follows:

The number of interobserver agreements divided by the number of interobserver disagreements plus the number of interobserver agreements, with the quotient multiplied by 100.

Agreement was calculated for the level of solicitation and possessor-response categories used in the data analyses (described further under the section on category profile analyses). Table 6 lists the percentage agreement scores for each of the solicitation and possessor-response categories by age groups. Only those categories for which there was percentage

Table 6

Percentage Agreement Scores for Solicitation and
Possessor-Response Categories^a

	Three year olds Percentage agreement	Five year olds Percentage agreement
Solicitations		
Insistent tone	40	50
Distressed tone	35	40
Direct	100	100
Indirect	100 _b	100
Mitigate loss	--	95
Advantage to other	100	--
Positive affect	--	--
Negative affect	50	40
More negative affect	80	--
Creative, clever	100	100
Deceptive	--	--
Indirect - friendship	--	--
Indirect - sharing	95	90
Direct - friendship	100	--
Direct - sharing	--	100
Reference to "Equal-Action"	--	85
Threatens negative, non-body	100	95
Threatens negative, body	--	--
Negative, verbal	--	100
Implies threat	--	--
Gestures to take	78	80
Gestures to attack	100	--
Takes objects	84	85
Attacks/struggles	90	95
Verbal - gesture take	90	--
Verbal - take	90	--
Please	--	--
Mutual take	75	80
Simultaneous use	75	85

Table 6 (continued)

	Three year olds Percentage agreement	Five year olds Percentage agreement
Possessor - responses		
Object exchanges	99	98
Does not acknowledge	90	89
Acknowledge other's right to possession	100	95
Delay	100	95
Distracts other	100	100
Simply refuses to relinquish	92	95
General equity	90	95
Equal-Action principle	--	85
Negative consequences - verbal	--	90
Negative consequences - physical	89	95
Allows other control	--	90
Reference to rule violation - solicitation	--	--

^aPercentage agreement scores were calculated as follows: the number of interobserver agreements divided by the number of agreements plus disagreements with the quotient multiplied by 100.

^bThere were no occurrences of this behavior within the 5 transcripts. There may be none within the 20 transcripts.

agreement of at least 75% were used in the analyses. Those categories which were not included in the data analyses due to low percentage agreement were: sounds distressed, looks distressed, and sounds insistent. The coding of these categories required subtle auditory and visual discriminations.

Because sequential patterns within the data were examined, it also was necessary to consider the extent to which there was agreement on the sequence in which solicitations occurred. Of the 181 solicitations which occurred for the five 3-year-old dyads, there was disagreement on the sequencing of four pairs of solicitations. Of the 187 solicitations which occurred for the 5-year-old dyads, there was disagreement on sequencing for six pairs of solicitations. Although no formal measure of reliability was calculated, it appears that there was high agreement between coders on the sequencing of solicitations.

Because the investigator coded all of the transcripts, her codes were utilized in the data analyses. Disagreements were noted and included in the observer reliability measures, but codes were not altered.

Basic Descriptive Information About the Dyadic Interaction

Before reporting the results of the specific level of analyses, it is important to describe some basic parameters of the dyadic interaction in order to provide a context in which to interpret the results of the analyses.

For the average dyad, the object was exchanged frequently within the 9-minute observational period. Comparison of the groups by a two-tailed

t test indicated that members of 3-year-old dyads exchanged the object significantly more often than 5-year olds ($\bar{X} = 14.15$, $SD = 11.70$; $\bar{X} = 8.40$, $SD = 5.80$; $p < .0563$). The object was possessed by 3-year olds for a median length of time of only 29.5 seconds before it was exchanged. The median length of time of possession of the object was 52 seconds for 5-year olds.¹

Category Profile Analyses

As Suomi (1978) asserts, this level of analysis is used most often in observational studies. At this level, some index of the incidence of specific codes across the observational period is collected for each dyad and a behavioral profile is constructed. This level of analysis ignores the particular sequence in which the behaviors occur and also ignores the influence of the behavior of the other member of the dyad. In this study, we are interested in constructing the following category profiles for each age group:

1. When the solicitor wants an object which is being used by a peer, what types of solicitations does he employ? (Solicitor category profile)
2. What types of behaviors does the possessor use in his response to these solicitations? (Possessor category profile)

In order to construct category profiles for each age group, scores were calculated which indicate the mean contribution across dyads within

¹The median length of time is reported rather than the mean length because of the skewed distribution of the data.

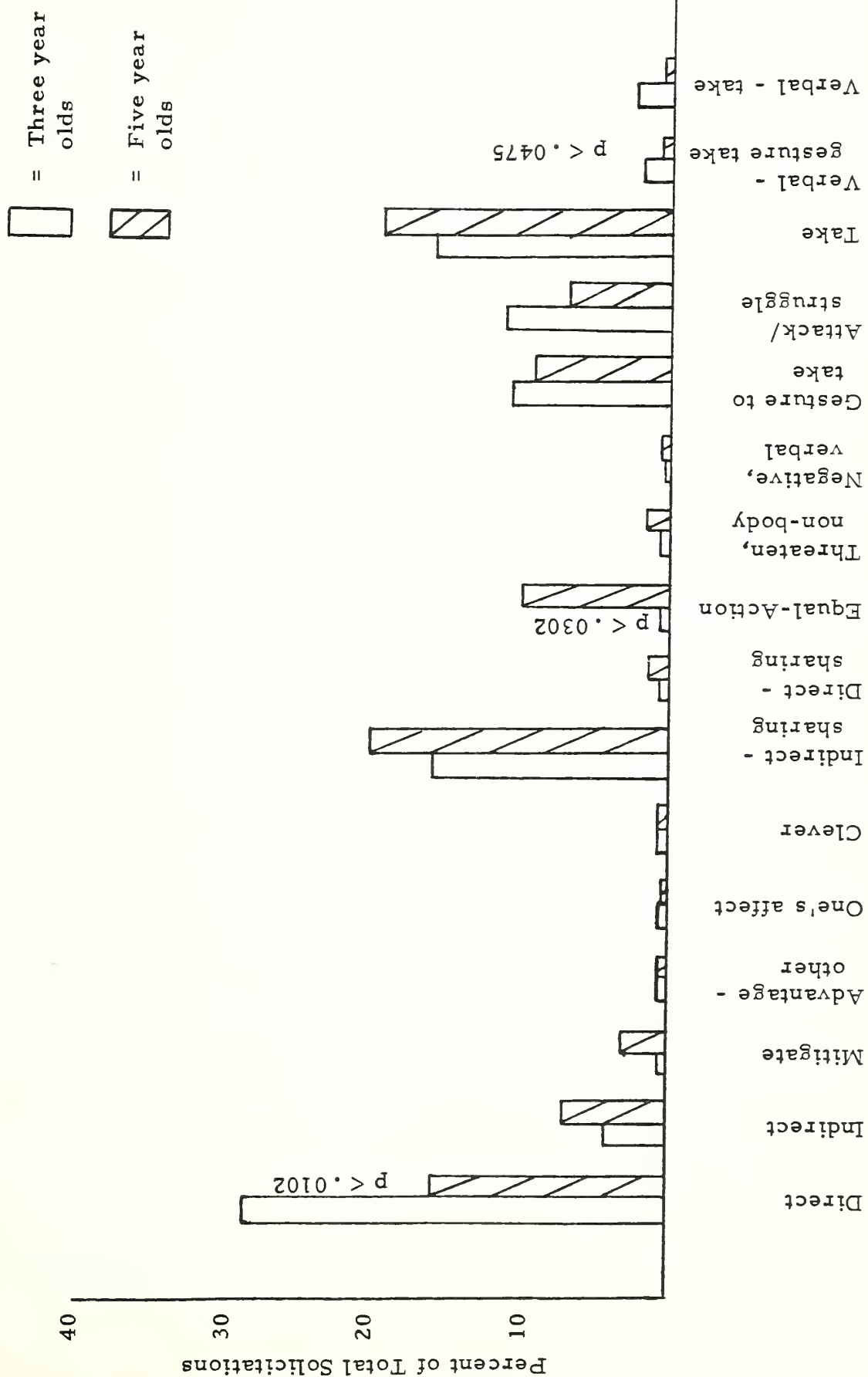
the age group. Means were calculated for the frequency and for the relative percentage contribution of each solicitation category (Tables 7 and 8, Appendix F) and of each possessor-response category (Tables 9 and 10, Appendix F). In addition, scores were calculated for each level of the hierarchical structure of solicitation codes and of possessor-response codes which were described in the methods section (see Tables 4 and 5).

Because of the low frequency of occurrence of individual categories, data analyses utilized frequency and percentage contribution scores from the next higher level within the coding structures (i.e. Direct, Indirect, Mitigate). T tests were used to assess whether 3-year olds differed from 5-year olds in their use of solicitation and possessor-response categories. Because the codes do not constitute independent observations, however, statistical analyses could not be used to make between-category comparisons. Only descriptive statements could be made about category comparisons within age groups.

Category Profile of the Solicitor

During the 9-minute interaction, the solicitors made frequent bids for the object with a total of 708 solicitations by 3-year olds ($\bar{X} = 35.40$, $SD = 21.44$) and 568 solicitations by 5-year olds ($\bar{X} = 28.40$, $SD = 15.07$). As the standard deviation scores indicate, there is tremendous variability within age groups. The number of solicitations utilized by a dyad ranged from 5 to 81 for 3-year olds and from 9 to 76 for 5-year olds.

Figure 1. Composition of the solicitation repertoires of three and five year olds.



Three-year olds.¹ When a 3-year-old solicitor made a bid for an object, he was more likely to use a verbal strategy than a physical one ($\bar{X}$ s = 54.31% and 41.75%, respectively). Only rarely did he employ a verbal and a physical strategy concurrently ($\bar{X}$ = 4.81%). Almost one-third of all of the solicitations used by 3-year olds consisted of a basic but direct bid for the object such as "give it to me," "can I have it?" or "I need it" ($\bar{X}$ = 28.71%, SD = 16.95). Physically taking the object and verbally asserting a right to a turn with it each occurred approximately 15% of the time ($\bar{X}$ = 16.79%, SD = 10.23; $\bar{X}$ = 15.91%, SD = 21.05). The 3-year-old solicitors resorted to attacking or physically struggling with the possessor for an average of 12% of their bids ($\bar{X}$ = 11.91%, SD = 7.37). All other categories were utilized less than 5% of the time.

Five-year olds. When making a bid for the object, 5-year-old solicitors also were more likely to use a verbalization than a physical behavior ($\bar{X}$ s = 60.39% and 39.26%, respectively). The two most frequently used types of verbalizations were an indirect appeal to the principle of sharing ($\bar{X}$ = 20.10%, SD = 14.83) and a direct bid for the object such as a directive to relinquish it, a request, or an assertion of need ($\bar{X}$ = 16.01%, SD = 12.41). Strategies which incorporated a direct appeal to the principle of equality in turn-taking constituted 9% of all bids ($\bar{X}$ = 8.74%, SD = 16.47), while basic indirect verbal bids accounted for

¹See Figure 1 for a graphic representation of the mean percentage contribution of solicitation categories to the total number of solicitations.

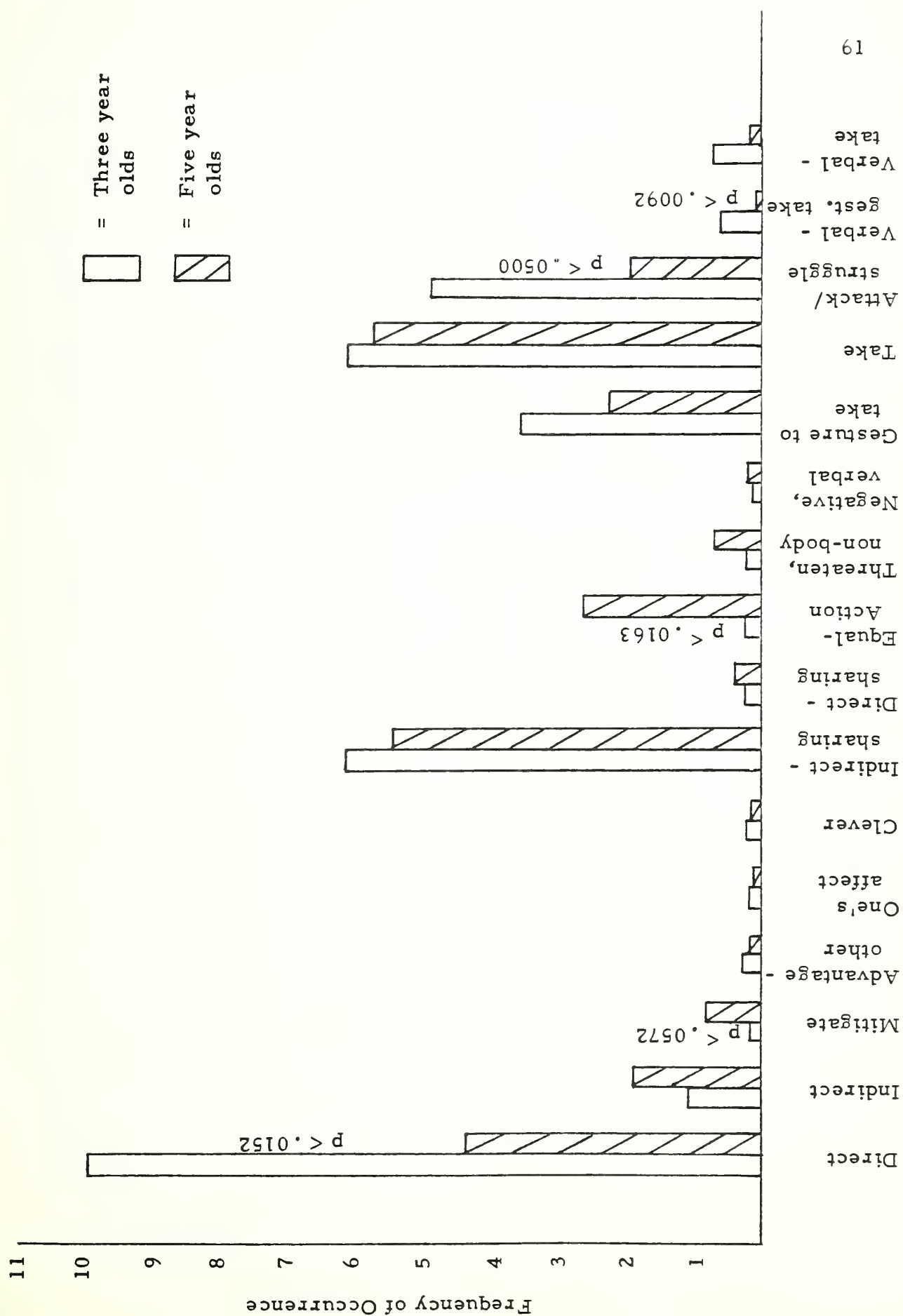
another 7% ($\bar{X} = 7.15\%$, $SD = 8.26$). Solicitations which attempted to mitigate the loss of the object for the possessor occurred less frequently ($\bar{X} = 3.06\%$, $SD = 6.57$). When 5-year olds utilized a physical strategy, they were most likely to take the object ($\bar{X} = 19.20\%$, $SD = 12.79$). Gesturing to take the object occurred half as often ($\bar{X} = 9.33\%$, $SD = 6.61$). Five-year-old possessors resorted to attacking the possessor during only 7% of their solicitations ($\bar{X} = 7.03\%$, $SD = 6.92$).

Age group comparisons. Because 3-year-old solicitors as a group utilized 140 more solicitations than the group of 5-year-old solicitors, t tests were performed using both the mean frequency per dyad (see Appendix F, Table 7) and the mean percentage contribution per dyad (see Appendix F, Table 8) as dependent measures.

During the dyadic interaction, 3-year olds made twice as many basic, direct verbal bids for the object as 5-year olds ($\bar{X} = 10.05$, $SD = 9.13$; $\bar{X} = 4.40$, $SD = 3.91$; $p < .0152$).¹ As solicitors, 3-year olds also attacked or physically struggled with the possessor twice as often as 5-year olds ($\bar{X} = 5.00$, $SD = 5.81$; $\bar{X} = 2.10$, $SD = 2.69$; $p < .0500$). The other type of solicitation which 3-year olds were more likely to use was a combination of a verbal bid with gesturing to take the object ($\bar{X} = .75$, $SD = 1.12$; $\bar{X} = .05$, $SD = .23$; $p < .0092$). In general, 5-year olds demonstrated a higher frequency of elaborated verbal solicitations than 3-year olds. For

¹See Figure 2 for a graphic representation of age comparisons of the mean frequency of occurrence of solicitation categories.

Figure 2. Age comparisons of the frequency of occurrence of solicitation categories.



example, 5-year olds incorporated more references to future or limited uses of the object in an attempt to mitigate the loss for the possessor ($\bar{X} = .80$, $SD = 1.44$; $\bar{X} = .15$, $SD = .37$; $p < .0572$). They were also much more likely to refer to the principle of equality in turn-taking ("Equal-action") by directly stating the concept that each child is entitled to the same number or length of turns or by keeping a "scorecard" of each child's turns ($\bar{X} = 2.70$, $SD = 4.49$; $\bar{X} = .15$, $SD = .67$; $p < .0163$). There were no other statistically significant differences between 3- and 5-year-old solicitors in the frequency of occurrence of level 1 solicitations.

When the frequency of occurrence of each type of solicitation was considered relative to the total number of solicitations used (mean percentage contribution per dyad), all but two of the age differences just reported were maintained.¹ Although the percentage contribution of mitigating the loss of the object was higher for 5-year olds than for 3-year olds, this difference was not statistically significant ($\bar{X} = 3.06\%$, $SD = 6.57$; $\bar{X} = .70\%$, $SD = 1.81$). Similarly, a higher proportion of 3-year olds' solicitations consisted of an attack or a physical struggle than for 5-year olds; however, the difference was not statistically significant ($\bar{X} = 11.91\%$, $SD = 11.93$; $\bar{X} = 7.03\%$, $SD = 6.92$). The only solicitation category for which significant age differences were obtained for percentage contribution scores but not for frequency scores was Simultaneous Use. Of the bids

¹See Figure 1 for a graphic representation of age comparisons of the mean percentage contribution of solicitation categories to the total number of solicitations.

made for the object, 5-year olds engaged in a higher proportion of simultaneous usage of the object than 3-year olds ($\bar{X} = 2.59\%$, $SD = 3.70$; $\bar{X} = .64\%$, $SD = 1.79$; $p < .0405$).

As a measure of diversity, a score was calculated for each dyad which represented the number of different types of solicitation categories used by that dyad. Of 26 possible solicitation categories, the mean number of different categories used by a given dyad was approximately 7 (Threes: $\bar{X} = 6.65$, $SD = 1.84$; Fives: $\bar{X} = 7.15$, $SD = 1.76$). Although the particular types of categories varied across age groups, the groups did not differ in the ability to utilize diverse strategies.

Category Profile for the Possessor

In describing the types of responses given by the possessor to the solicitations, it is important to note that approximately 45% of the solicitations were not acknowledged by the possessor¹ (Threes: $\bar{X} = 47.35\%$; Fives: $\bar{X} = 44.83\%$). For 19% of the object exchanges which occurred, the possessor spontaneously relinquished the object without any solicitation in the preceding 10 seconds (Threes: $\bar{X} = 19.21\%$; Fives: $\bar{X} = 19.29\%$).

Three-year olds. When 3-year-old possessors did make a response to their solicitors,² they were most likely to respond by relinquishing

¹"Does not acknowledge other's solicitation" was coded if the possessor did not make a codable physical or verbal response within 10 seconds of the solicitation or before the occurrence of the next solicitation.

²Those responses which met the criteria for solicitation-responses but occurred more than 10 seconds after a solicitation were coded as possessor responses but not considered as direct acknowledgment.

possession of the object (see Appendix F, Table 9) ($\bar{X} = 53.69\%$, $SD = 29.63$). The possessor resisted compliance with the solicitor's bids for the object through verbalizations approximately 30% of the time ($\bar{X} = 28.46\%$) and resorted to an attack or physical struggle approximately 16% of the time ($\bar{X} = 15.90\%$, $SD = 17.16$). The number of different verbalizations used by the 3-year olds to resist compliance was quite limited. Three basic categories constituted the majority of the verbalizations: simple refusal to relinquish the object ($\bar{X} = 14.37\%$, $SD = 22.32$), assertion of a right to a turn with the object ($\bar{X} = 4.20\%$, $SD = 6.40$), and imposition of a delay ($\bar{X} = 4.49\%$, $SD = 9.03$). The remaining categories were utilized less than 3% of the time.

Five-year olds. The 5-year-old possessor was as likely to relinquish the object as he was to express noncompliance verbally ($\bar{X} = 40.49\%$, $SD = 23.84$; $\bar{X} = 43.49\%$, $SD = 18.15$). He was less likely to attack or to struggle with the solicitor ($\bar{X} = 10.73\%$, $SD = 11.99$). In general, 5-year-old possessors appeared to utilize a wider range of verbal responses than 3-year olds. They expressed their noncompliance with the solicitation through the following types of verbalizations: imposition of a delay ($\bar{X} = 12.88\%$, $SD = 8.21$), appeal to the principle of equality in turn-taking ($\bar{X} = 9.27\%$, $SD = 14.90$), allowance of partial control of the object by the solicitor ($\bar{X} = 9.51\%$, $SD = 13.44$), acknowledgment of the solicitor's right to possession ($\bar{X} = 6.05\%$, $SD = 6.13$), and simple refusal ($\bar{X} = 6.31\%$, $SD = 5.54$).

Age comparisons. Three-year-old possessors more frequently relinquished the object to their solicitors than 5-year-old possessors (see Appendix F, Table 10) ($\bar{X} = 14.15$, $SD = 11.70$; $\bar{X} = 8.35$, $SD = 5.79$; $p < .0542$). Five-year olds responded more frequently with the imposition of a delay either directly or through fantasy than 3-year olds ($\bar{X} = 2.50$, $SD = 1.46$; $\bar{X} = .90$, $SD = 1.94$; $p < .0135$). Also more frequent among 5-year olds was a reference to the principle of equality in turn-taking such as "I get it three turns 'cause you got it three turns" ($\bar{X} = 2.60$, $SD = 4.59$; $\bar{X} = .15$, $SD = .49$; $p < .0229$).

Because 3-year-old possessors made a greater number of responses than 5-year-old possessors (466 versus 426), age comparisons also were made using the percentage contribution of the category to the total number of responses as the dependent measure (see Appendix F, Table 9). When the percentage contribution of relinquishing the object was compared for 3- and 5-year olds, it was found that the proportions were not significantly different ($\bar{X} = 53.69\%$, $SD = 29.63$; $\bar{X} = 40.49\%$, $SD = 23.84$, respectively). However, significant age differences again were found for the categories of Reference to Equal-action (Threes: $\bar{X} = .70\%$, $SD = 2.16$; Fives: $\bar{X} = 9.27\%$, $SD = 14.90$; $p < .0150$) and Delay (Threes: $\bar{X} = 4.49\%$, $SD = 9.03$; Fives: $\bar{X} = 12.88\%$, $SD = 8.21$; $p < .0146$) when the percentage contribution scores were compared. In addition, a higher percentage of 5-year-old possessor responses consisted of acknowledging the solicitor's right to possession of the object by confirming his right to use, proposing sharing,

or asking the solicitor's permission to continue to use the object ($\bar{X} = 6.05\%$, $SD = 6.13$; $\bar{X} = 2.56\%$, $SD = 3.69$; $p < .0354$). Five-year olds also demonstrated a higher proportion of responses in which they allowed the solicitor to use the object simultaneously or to direct its control through verbalizations such as "land it now," "make it go fast" (Solicit other's control: $\bar{X} = 9.51\%$, $SD = 13.44$; $\bar{X} = 2.36\%$, $SD = 4.58$; $p < .0302$).

Analysis of Within-Individual Sequences

In this section, we shall consider those questions which take into account the sequence in which the solicitations occurred during the object transaction interchanges.

Initial Solicitations¹

Three-year olds. In making an initial bid for the object within each object transaction interchange, 3-year-old solicitors were somewhat more likely to use a physical strategy than a verbal one ($\bar{X} = 49.85\%$, $SD = 27.34$; $\bar{X} = 44.34\%$, $SD = 28.75$, respectively). The type of solicitation which they were most likely to use first was to take the object ($\bar{X} = 23.24\%$, $SD = 21.79$). Other physical strategies which occurred with notable frequency as first solicitations were gesturing to take the object ($\bar{X} = 13.65\%$, $SD = 22.68$) and attacking or struggling with the possessor ($\bar{X} = 11.41\%$, $SD = 13.30$). If the solicitor made an initial verbal bid, he was most likely to use a direct basic bid such as a request, an expression of need, or a

¹See Appendix F, Table 11.

directive to give the object to him ($\bar{X} = 22.76\%$, $SD = 22.32$). Indirect references to sharing such as an assertion of the right to a turn with the object were utilized approximately 15% of the time ($\bar{X} = 14.91\%$, $SD = 25.98$). All other categories were utilized less than 4% of the time.

Five-year olds. In making their first bid for an object, 5-year olds were more than twice as likely to use a verbal tactic as a physical one ($\bar{X} = 69.59\%$, $SD = 21.87$; $\bar{X} = 30.41\%$, $SD = 21.87$, respectively). Over 25% of all initial solicitations used by this group consisted of an indirect appeal to the principle of sharing ($\bar{X} = 25.92\%$, $SD = 24.98$). Direct, verbal bids for the object constituted another 19% of all first tactics ($\bar{X} = 19.02\%$, $SD = 24.15$). Also used with some consistent frequency were references to the principle of equality in turn-taking ($\bar{X} = 9.76\%$, $SD = 20.32$), indirect verbal bids ($\bar{X} = 6.11\%$, $SD = 11.90$), and solicitations which attempt to mitigate the loss for the possessor ($\bar{X} = 5.91\%$, $SD = 13.61$). As for 3-year olds, the physical strategy used most often was taking the object ($\bar{X} = 16.15\%$, $SD = 14.71$). Gesturing to take was the next most likely physical strategy with a mean percentage contribution of 8% ($\bar{X} = 8.11\%$, $SD = 12.84$). All other categories were used less than 3% of the time.

Age comparisons. The t test of a difference between means was used to assess whether 3-year olds differed from 5-year olds in the types of solicitations which were used first in the object transaction interchanges. In making a first bid for the object, 5-year olds demonstrated a significantly higher proportion of verbal strategies than 3-year olds ($\bar{X} = 69.59\%$,

SD = 21.87; $\bar{X}$ = 44.34%, SD = 28.75; $p < .0034$). Three-year olds were more likely to resort to a physical strategy ($\bar{X}$ = 49.85%, SD = 27.34; $\bar{X}$ = 30.41%, SD = 21.87; $p < .0176$). For example, 3-year olds utilized a significantly higher proportion of attacks and physical struggles than 5-year olds ($\bar{X}$ = 11.41%, SD = 13.30; $\bar{X}$ = 2.67%, SD = 6.13; $p < .010$). Three-year olds also were more likely to use a verbalization and a gesture to take concurrently ($\bar{X}$ = 1.84%, SD = 3.35; $\bar{X}$ = .00%, SD = .00; $p < .019$). In contrast, solicitations which incorporated a bid for a future or limited turn with the object were significantly more likely to be used by the 5-year olds (Mitigate loss: $\bar{X}$ = 5.91%, SD = 13.61; $\bar{X}$ = .00%, SD = .00; $p < .0597$).

Another important question related to the type of strategy used initially is whether the pattern differs according to the amount of time elapsed during the interaction. That is, are certain types of strategies more likely to be used in the early part of the interaction than in the later minutes? Do children change their initial tactics as a result of experience with their partner in the interchange? In order to answer this question, a comparison was made of the first solicitation used by one member of the dyad in the first object transaction interchange with the first solicitation used by that same child in his last object transaction interchange. A chi square test for correlated proportions with Yates correction for small sample size was used to assess differences statistically within each age group for the following categories: Direct, Indirect reference to sharing, Reference to equal-action, Take, Gesture to take, and Attack-struggle.

None of the obtained chi square values reached an appropriate level of significance.

Last Solicitations¹

Three-year olds. For 3-year olds, physical solicitations were almost three times as likely to be the last solicitation in the object transaction interchange as verbal solicitations ($\bar{X}$ = 69.38%, SD = 24.45; $\bar{X}$ = 26.42%, SD = 21.50, respectively). Of the solicitation categories which occurred at the end of the interchange, attacking and struggling with the possessor occurred most frequently ($\bar{X}$ = 33.79%, SD = 33.39). Other physical strategies used frequently were taking the object ($\bar{X}$ = 20.04%, SD = 24.77) and gesturing to take it ($\bar{X}$ = 14.61%, SD = 23.85). A direct, verbal bid for the object accounted for approximately 14% of all last bids ($\bar{X}$ = 14.32%, SD = 16.91), while indirect references to sharing accounted for another 9% ($\bar{X}$ = 8.96%, SD = 17.97). Other categories each constituted less than 2.5% of last solicitations.

Five-year olds. In contrast to the 3-year-old solicitors, 5-year olds were as likely to end the object transaction interchange with a verbal bid as a physical bid ($\bar{X}$ = 48.39%, SD = 30.39; $\bar{X}$ = 51.61%, SD = 30.39). The category which was most likely to occur as a last solicitation was taking the object ($\bar{X}$ = 20.04%, SD = 24.77). Also likely to occur were indirect references to sharing ($\bar{X}$ = 18.49%, SD = 19.87) and direct, verbal bids

¹See Appendix F, Table 12.

($\bar{X}$ = 16.49%, SD = 24.85). An attack on the possessor was utilized approximately 13% of the time ($\bar{X}$ = 13.42%, SD = 23.18), while gesturing to take the object occurred approximately 12% of the time ($\bar{X}$ = 12.04%, SD = 22.69). Of the remaining categories, each was utilized less than 4% of the time.

Age comparisons. As indicated by the standard deviations which are listed in Appendix F (Table 13), the degree of deviation from the mean within each age group is considerable. Because of the large amount of within-group variance, only several of the t tests which were performed resulted in a value whose significance level was sufficient to reject the null hypothesis. The proportion of last solicitations which consisted of an attack or a struggle was two and one-half times greater for 3-year olds than for 5-year olds ($\bar{X}$ = 33.79%, SD = 33.39; $\bar{X}$ = 13.42%, SD = 23.18; $p < .0309$). The only other category for which there were significant age differences was the concurrent usage of a verbal bid with a gesture to take the object. Three-year olds were more likely to use such a strategy, although it constituted only 2% of all last bids ($\bar{X}$ = 2.06%, SD = 3.93; $\bar{X}$ = .00%, SD = .00; $p < .0244$).

Last Solicitations According to Chain Length of the Interchange

Does the type of solicitation used as a last bid for the object vary according to the number of prior solicitations within the interchange? As the number of unsuccessful bids increases, does the solicitor resort to

more coercive strategies? In order to answer this question, the mean percentage contribution of each solicitation category to the total number of last solicitations was determined separately for object transaction interchanges of two, of three-four, and of five or more solicitations (see Table 13 and Table 14, Appendix F). As noted in the tables, not all 20 dyads contributed data.

Three-year olds. As Figures 3a and 3b graphically depict, the percentage contribution of most categories does not change by more than 5% across object transaction interchanges of increasing length. The category whose use appeared to vary most according to the number of prior solicitations utilized is gesture to take the object. There appears to have been a curvilinear relationship between the occurrence of gesture to take and the chain length of an object transaction interchange. In interchanges where only two solicitations were utilized, approximately 20% (see Table 13, Appendix F) of the last solicitations were gesture to take the object ($\bar{X} = 19.98\%$, $SD = 35.20$). This also is the case for interchanges in which five or more solicitations were used ($\bar{X} = 19.26\%$, $SD = 32.74$). However, during interchanges of intermediate length (three or four solicitations), gesturing to take the object accounts for only 10% of last solicitations ($\bar{X} = 10.03\%$, $SD = 25.76$). A similar curvilinear relationship also was found for the category of attack-struggle. Attacking the other was used approximately 25% of the time during intermediate interchanges ($\bar{X} = 25.52\%$, $SD = 36.34$), but 31% of the time during short and long interchanges ($\bar{X} = 30.99\%$,

Figure 3a. Changes in the use of verbal solicitations as a function of the number of bids within an object transaction interchange.

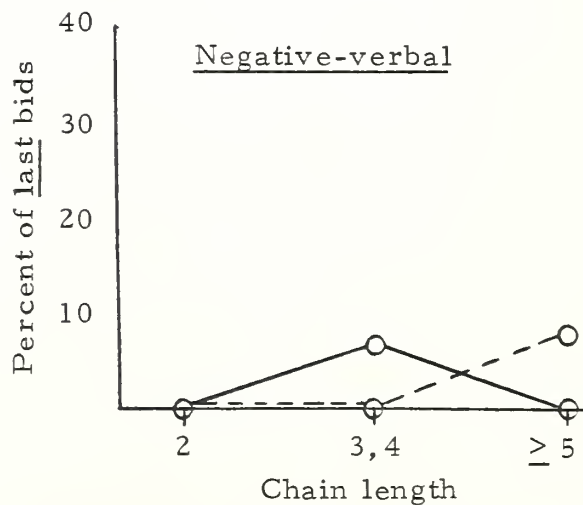
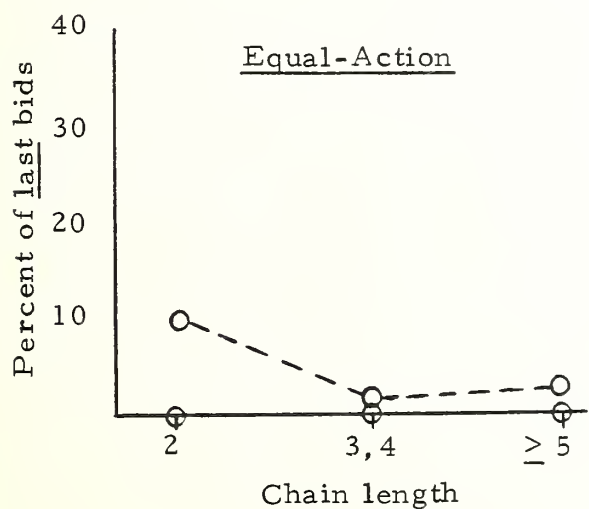
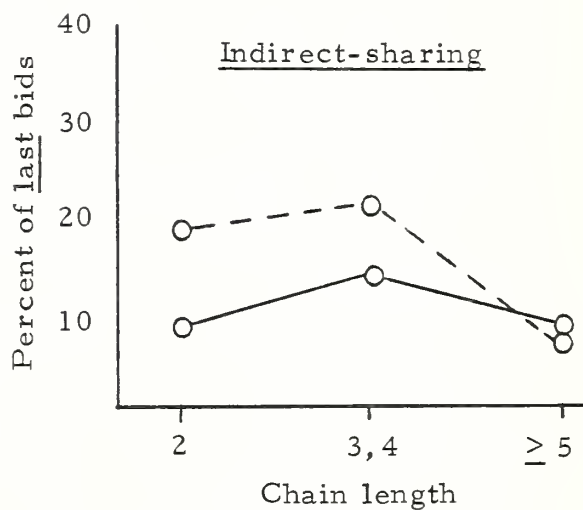
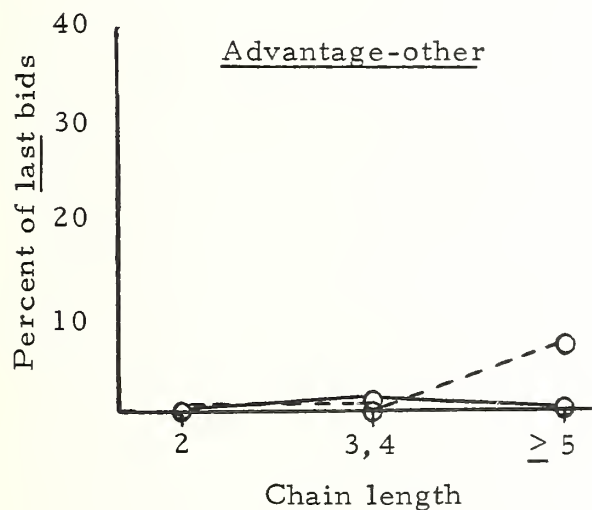
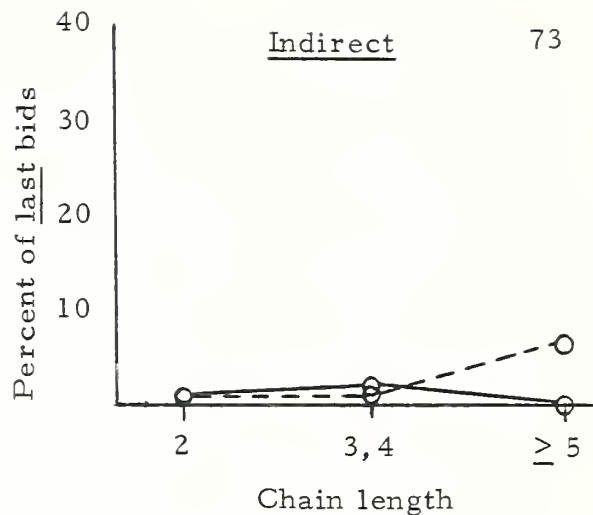
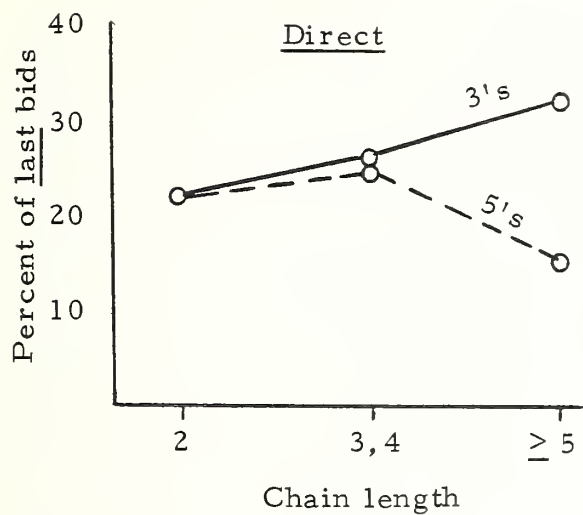
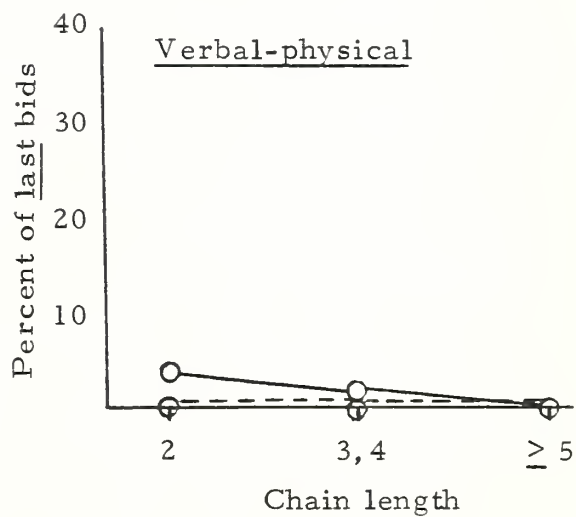
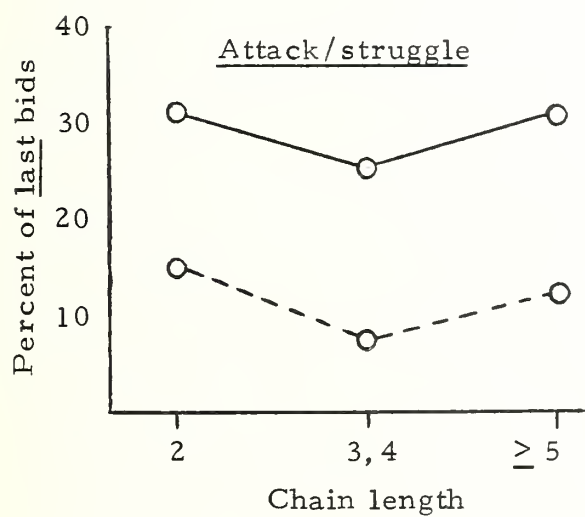
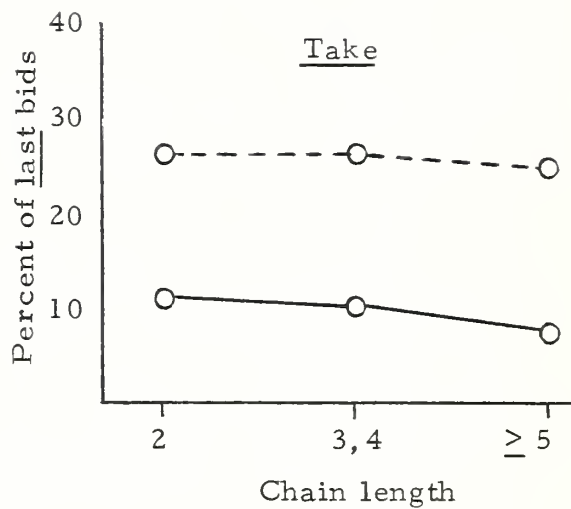
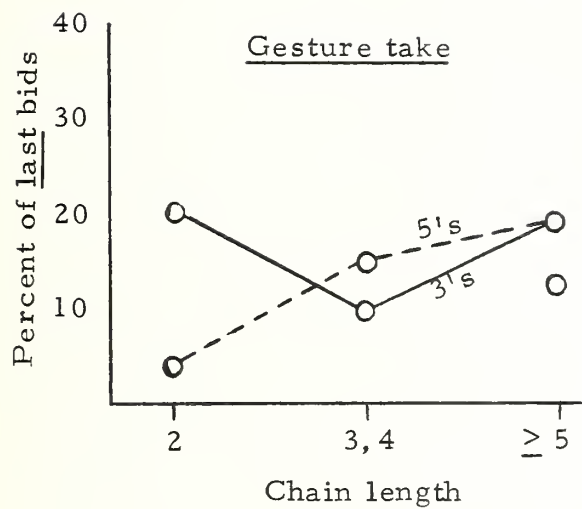


Figure 3b. Changes in the use of physical and verbal-physical solicitations as a function of the number of bids within an object transaction interchange.



SD = 35.22; $\bar{X}$ = 30.56%, SD = 37.95, respectively). An inverse curvilinear relationship was noted for negative verbalizations such as appealing to an authority and rejecting the other. Neither of these verbalizations were used for shorter or longer interchanges; however, they constituted 6% of the last bids for interchanges of intermediate length ($\bar{X}$ = 6.25%, SD = 25.00). Direct, verbal bids for the object were the only type of solicitations whose occurrence increased as a function of the number of prior unsuccessful solicitations (Chain of two: $\bar{X}$ = 22.17%, SD = 25.58; Chain of three, four: $\bar{X}$ = 25.92%, SD = 34.47; Chain of five or more: $\bar{X}$ = 32.41%, SD = 44.18).

Five-year olds. In contrast to the 3-year olds, the percentage contribution of most solicitation categories to the total number of last solicitations appeared to change as a function of the number of prior solicitations during the object transaction interchange (see Table 14, Appendix F, and Figures 3a and 3b). The most marked changes seemed to occur between chains of either length two or three-four and those of length five or greater. The use of a direct, verbal bid as a last solicitation markedly decreased during the longer interchanges (Two: $\bar{X}$ = 22.10%, SD = 36.54; Three: $\bar{X}$ = 24.51%, SD = 39.14; Five: $\bar{X}$ = 15.00%, SD = 35.10). A similar relationship appeared to govern the use of indirect references to sharing (Two: $\bar{X}$ = 18.65%, SD = 36.95; Three: $\bar{X}$ = 21.57%, SD = 33.60; Five: $\bar{X}$ = 7.78%, SD = 20.77). Marked increases in use were noted for solicitations which incorporate an advantage for the other (Two: $\bar{X}$ = .00%, SD =

.00; Three: $\bar{X} = .00\%$, $SD = .00$; Five: $\bar{X} = 6.67\%$, $SD = 25.82$) or focus on negative consequences by threatening an appeal to authority or appealing to authority (Two: $\bar{X} = .00\%$, $SD = .00$; Three: $\bar{X} = .00\%$, $SD = .00$; Five: $\bar{X} = 6.45\%$, $SD = 1.67$). For some categories, a change in percentage contribution occurred between chains of length two and those of length three or four. For example, gesturing to take the object accounted for a greater proportion of last solicitations for interchanges of intermediate length than for those with fewer solicitations (Two: $\bar{X} = 4.17\%$, $SD = 10.72$; Three: $\bar{X} = 14.90\%$, $SD = 28.21$; Five: $\bar{X} = 12.22\%$, $SD = 28.50$). In contrast, a decline in percentage contribution was noted for references to equality in turn-taking between interchanges of short and intermediate length (Two: $\bar{X} = 9.52\%$, $SD = 27.51$; Three: $\bar{X} = 1.96\%$, $SD = 8.08$; Five: $\bar{X} = 3.33\%$, $SD = 12.91$). As in the case of 3-year olds, the use of an attack or struggle as a last bid was less frequent for chains of intermediate length than it was for chains that either were shorter or longer (Two: $\bar{X} = 15.48\%$, $SD = 29.57$; Three: $\bar{X} = 7.54\%$, $SD = 15.14$; Five: $\bar{X} = 13.33\%$, $SD = 29.68$).

Age comparisons. As one can see in reviewing Tables 13 and 14 in Appendix F, the standard deviations are much larger than the means for all solicitation categories. The amount of within-group variance for categories is quite large. When the t test of a difference between means was used to test for between-group differences, no significant differences were found.

The Relationship Between the Type of Solicitation Utilized and the Number of Prior Unsuccessful Solicitations

Does the type of solicitation utilized by the child depend on the number of prior bids which he has made for the object? Does he abandon the use of unsuccessful tactics early in the interchange or does he persist with them? Are some tactics used only as a last resort?

In order to answer these questions, object transaction interchanges first were separated into chain lengths of two, three, four, or five and greater. Within each of these divisions, the frequency of occurrence of each type of solicitation was tabulated separately for each position within the chain (i.e. first, second, etc.). This was done separately for each age group. While it was originally planned to use the lag sequential technique (Sackett, 1979) to compare the probability of occurrence of specific tactics at different positions within the chain, there were not enough data to do so.¹ Instead, a chi-square test of correlated proportions with Yates correction for continuity was used to make within-group comparisons (i.e. first versus second, second versus third, first versus third) of the categories. Because the data included more than one observation per dyad at each position in the chain, the assumption of independent observations is not met. Therefore, the chi-square value will be considered as an index of the degree to which the frequencies differ and p values will not be assigned to it.

¹In order for the z score to be an adequate approximation to the normal distribution, N must be greater than 25 (Gottman & Parkhurst, 1978).

Three-year olds. When comparisons were made between the frequency of occurrence of a particular solicitation at one position in the chain with its frequency at another position, the greatest differences appeared to be between the first and the last solicitations within an object transaction interchange. The obtained chi-square value was greater than 3.841 ($\chi^2(1, .05)$) for chain lengths of two, three, and five or more for the category of attack-struggle (χ^2 s = 11.08, 5.14, 5.14). This suggests that 3-year olds were more likely to engage in an attack or struggle with their possessor at the end of the interchange than at the beginning. Conversely, in chains of length three, 3-year olds appeared to be more likely to take the object at the beginning of the interchange than at the end ($\chi^2 = 4.17$).

Five-year olds. Because of the smaller frequency of occurrence for some categories among 5-year olds, chains of length two and three were collapsed as were chains of four and greater. As for 3-year olds, 5-year olds appeared to be more likely to resort to an attack or struggle at the end of the interchange than at the beginning (χ^2 s = 4.17, 4.17). For chains of lengths two and three, 5-year olds appeared to be more likely to use an indirect reference to sharing as a first solicitation than as a last one ($\chi^2 = 7.11$).

The Probability of Success of a Solicitation Given Its Occurrence

The last question to be considered in the analyses of within-individual sequences is "What is the likelihood of success of a solicitation given its

occurrence?" In order to answer this question meaningfully, two factors need to be considered: the content of the solicitation and the position at which it occurs within the object transaction interchanges. As Table 15 (Appendix F) indicates, the conditional probability of success for the total group of solicitations varied according to the position at which they occurred.¹ For 3-year olds, the likelihood of success of solicitations was highest at position two (conditional probability of success = 0.4485) and lowest at positions greater than 10 (cps = 0.0930). For 5-year olds, the highest probability of success occurred at position three (cps = 0.3153) whereas the lowest probability of success occurred at positions greater than 10 (cps = 0.0533). These results indicate the importance of considering not only the specific content of the solicitation but also its position of occurrence in discussing the effectiveness of particular solicitations. For each solicitation category, a conditional probability of success was calculated separately for each of the following positions within object transaction interchanges: one, two, three, four, five to 10, and greater than 10.²

Three-year olds. As Table 15 (Appendix F) indicates, the conditional

¹The conditional probability of success (cps) was calculated by dividing the number of solicitations which led to an object exchange at that position by the total number of solicitations used at that position. Data were collapsed across object transaction interchanges within dyads, and then collapsed across dyads.

²If the category was used less than 10 times at a given position, the conditional probability of success was not calculated.

probability of success for attacking the other was considerably higher than the conditional probability of success for any other category at each position within the object transaction interchanges. Attacking the other led to an object exchange approximately 65% of the time, whether it was used first, second, third, or fourth. Its success rate was somewhat lower at positions five through 10, but it still was effective one out of every two times ($cps = 0.5263$). In contrast, the likelihood of success of a direct verbal bid, of an indirect reference to sharing, of gesturing to take the object, and of taking the object varied according to the position at which it was used. For each of these categories, the conditional probability of success was higher at the second position than at any other position. The likelihood of these solicitations leading to an object exchange as a second bid was approximately 40% (Direct: $cps = 0.3750$; Indirect-sharing: $cps = 0.4074$; Gesture to take: $cps = 0.4762$; Take: $cps = 0.4074$). Of those solicitations which were used as a third bid for the object, an indirect reference to sharing and a direct verbal bid for the object led to an object exchange approximately 30% of the time (cps 's = 0.2857 and 0.3125, respectively). Taking the object worked only 14% of the time ($cps = 0.1429$). Fourth bids for the object were much less frequent with only attack and direct verbal bids being used at least 10 times each. Attacking the other had a probability of success of 0.60; a basic request or directive to relinquish the object was successful only 13% of the time ($cps = 0.1333$). When a direct verbal bid, an indirect reference to sharing, or gesturing to take

the object were used as a fifth through 10th bid, their likelihood of success only was 20% (cps's = 0.2069, 0.1739, 0.2000, respectively). Taking the object was not very successful as it worked only 7 out of every 100 times (cps = 0.0667). The frequency of occurrence of individual categories for positions greater than 10 was quite low. As a group, solicitations which were used at this point only were successful 9% of the time (cps = 0.0930).

Five-year olds. Taken as a group, solicitations which were used as second and third bids for the object were most successful (cps's = 0.3153, 0.3684). In contrast to the 3-year olds, attack was more likely to be an effective tactic as a second bid than at any other position (cps = 0.5455). Basic requests for the object or directives to relinquish it also had higher probabilities of success if used as second bids (cps = 0.500). At position two, a direct verbal bid or an attack on the other led to an exchange of the object one out of two times. Taking the object was most successful when used as a third bid for the object (cps = 0.6250). Other categories which also were most effective as third tactics were an indirect reference to sharing (cps = 0.4167), gesturing to take the object (cps = 0.4000), and direct verbal bids (cps = 0.2941). The most effective tactics used as fifth through 10th bids were attacking the other or gesturing to take, each of which worked approximately one-third of the time (cps's = 0.3000, 0.3000, respectively). Taking the object and direct verbal bids were successful only one in five times (cps's = 0.2000, 0.2000). Categories were used infrequently at positions of greater than 10. As a group, solicitations

rarely were effective at this point ($cps = 0.0533$).

Age comparisons. For categories with a frequency of at least 10, tests of significance between the conditional probabilities for each category were made through the use of a z ratio. A two-tailed test was used. Any second bid for the object by a 3-year old had a higher probability of success than any second bid made by 5-year olds ($cps's = 0.4485, 0.3153$; $p = .0264$). When conditional probabilities were compared for each position of occurrence, it was found that the use of an indirect reference to sharing as a first bid was more than twice as successful for 5-year olds than for 3-year olds ($cps's = 0.3809, 0.01538$; $p = .0220$). As a third solicitation, taking the object was more than four times as successful for 5-year olds than for 3-year olds ($cps's = 0.6250, 0.1429$; $p = .0072$). Because of the low frequency of occurrence of attack at most positions by 5-year olds, conditional probabilities were calculated for this category by collapsing across position within each of the age groups. The use of an attack was almost twice as likely to lead to an object exchange among 3-year olds as it was among 5-year olds ($cps's = 0.6300, 0.3571$; $p = .0028$).

DISCUSSION

The main focus of this discussion will be to examine developmental changes in the use of instrumental aggression within the context of changes in the use of non-aggressive interpersonal tactics to gain possession of an object. The influence of other variables such as the sequence in which the strategies were used and the effectiveness of the strategies also will be discussed. Hypothesized mechanisms for the developmental changes in the use of instrumental aggression also will be explored.

Developmental Changes in the Use of Instrumental Aggression to Obtain an Object from a Peer

As originally defined by Feshbach (1964), aggressive behaviors which are used for the purpose of achieving a non-aggressive goal such as obtaining possession of an object are labelled "instrumental" aggression. In this study, the controlled observational setting was designed to maximize the potential for object transactions. The object had a high interest value, was the only playful object in the room, and could only be used by one child at a time. Those aggressive behaviors which occurred during the observed dyadic interaction are considered primarily to have served the purpose of influencing the possessor to relinquish the object or influencing the

solicitor to allow the possessor to maintain his possession. The instrumental aggressive behaviors are viewed as one type of strategy which could have been used to obtain possession of the object. In this study, the following behaviors were coded as instrumental verbal aggression: threats of negative consequences such as personal rejection and appeal to authority; threats of physical attack; and the use of negative verbal consequences such as rejection of the other and appeal to authority. Behaviors which were coded as instrumental physical aggression were: gestures to take the object, gestures to attack the other, taking the object, and attacks on the other. The results of this study indicate that 3-year-old boys were as likely to use verbal aggression as a tactic for obtaining possession of the object as 5-year-old boys. The frequency of occurrence for each of the categories of verbal aggression did not differ significantly between age groups. Similarly, 3-year-old solicitors did not differ from 5-year-old solicitors in the frequency with which they took the object or gestured to take it. The only type of instrumental aggression which was used significantly more often by 3-year-old solicitors was aggression which involved bodily harm. Three-year-old solicitors were twice as likely as 5-year olds to try to coerce the possessor into relinquishing the object by attacking or struggling with him.

As discussed in the Introduction, prior investigations of the developmental course of aggressive behavior during the preschool years appear to be invalid due to confounding sources of variance. This observational study

is believed to be the first valid investigation of the developmental course of instrumental aggressive behaviors during the preschool years. The decrease in the use of attack to gain possession of an object is consistent with the reported decrease in the use of instrumental aggressive behavior for post-preschool aged white children (Bonner, 1976; Hapkiewicz, 1974; Hartup, 1974). Although Bonner (1976) reports that significant age differences were found only for the category "usurp or regain objects, space or activity" (p. 63), neither he nor Hartup (1974) differentiate between different forms of instrumental aggression such as attacking the other or taking the object. In his study of the use of instrumental aggression to obtain possession of an object, however, Hapkiewicz (1974) reports that the use of "pushing" behaviors markedly declined from the first to the second grade.

Although a significant decrease in the use of instrumental aggressive behavior by post-preschool aged children has been found consistently among groups who differed in socioeconomic status (lower, middle) and sex, the results of these observational studies (Hapkiewicz, 1974; Hartup, 1974) also indicate that the age at which the decline in instrumental aggression occurs may be a function of the race or socioeconomic status of the group. For example, within a group of children of lower socioeconomic status, Hartup (1974) found that the rate of instrumental aggression did not differ for black and white children during the preschool years but that older black children demonstrated a significantly higher frequency of instrumental aggression than older white children (ages 6 and 7). When socioeconomic

groups were compared, Hapkiewicz (1974) found that the decline in the use of instrumental aggression occurred from the first to the second grade for boys of middle socioeconomic status but did not occur until the third grade for boys of lower socioeconomic status. These findings emphasize the importance of not generalizing the observed decline in instrumental aggressive attacks among preschool-aged white boys of middle socioeconomic status to any other groups of children.

Developmental Changes in the Use of Non-Aggressive Interpersonal Tactics to Gain Possession of an Object

Prior research has emphasized the aggressive interpersonal tactics which children use to gain possession of an object. It has not provided any information on the use of aggression to resolve conflicts relative to the use of non-aggressive strategies to resolve such disputes. Are aggressive tactics used most often or are prosocial tactics utilized more frequently? Consideration of non-aggressive interpersonal tactics not only provides a perspective on the use of aggressive strategies to obtain possession of objects but also provides information which helps to explain the decrease in the use of instrumental aggression.

The results of this observational study indicate that more than one-half of the solicitations utilized by 3- and 5-year olds were verbal, non-aggressive bids for the object. Verbal aggression rarely was used by either age group. If coercion was utilized, it was physical in nature.

The repertoire of non-aggressive interpersonal tactics demonstrated

by 3-year-old boys in this controlled observational setting was quite limited. They were twice as likely to use basic, verbal bids as 5-year olds. The majority of their non-aggressive solicitations consisted of simple requests for the object such as "Can I have it?" or directives such as "Give it to me." When trying to exert influence on the possessor through verbalizations, they limited themselves to indirect references to principles of sharing such as an assertion of their right to a turn with the object. They rarely incorporated other dimensions of verbal influence such as focusing on the possessor's interest in the object, trying to outwit the possessor, or appealing more directly to principles of sharing.

In contrast to the 3-year olds, the 5-year-old solicitors utilized a greater number of non-aggressive strategies which incorporated some type of persuasive element by which the solicitor tried to influence the possessor to relinquish the object. When making a verbal bid for the object, they used fewer neutral requests and more elaborated solicitations than 3-year olds. Five-year-old solicitors demonstrated the ability to use rudimentary perspective-taking skills in order to influence the possessor to relinquish the object. In order to make the request more acceptable, 5-year-old solicitors attempted to mitigate the loss for the possessor by requesting limited or future turns with the object.

Although this strategy was used more often by 5-year olds than by 3-year olds, it constituted only 4% of all of the solicitations used by the 5-year olds. It appears that this skill is just beginning to emerge for this age

group. Data from Clark and Delia's (1976) study on the development of functional persuasive skills suggest that the use of such strategies gradually increases as children reach middle childhood. These investigators asked second through ninth graders to generate responses cognitively to three hypothetical persuasive tasks. Using a system of classifying persuasive arguments based on the level of perspective-taking skill, they found that the total number of arguments increased with age and that older children used more diversified messages than younger ones. When asked to generate persuasive arguments for hypothetical situations, only one-third of the second graders utilized some type of request to forestall counter-arguments such as limiting the request to make it more acceptable. This type of strategy, however, was used by 70% of the fourth, fifth, and sixth graders.

The other type of verbal strategy which 5-year-old solicitors used more frequently than 3-year olds to try to exert influence on the possessor was references to the principle of equality in turn-taking. Solicitations of this type incorporated statements which referred to the concept that both children should have possession of the object for equal lengths of time or for an equal number of turns. Strategies within this category were of two types: (a) a direct reference to this principle such as a statement of the rule; (b) an indirect reference to this principle through keeping a scorecard or arguing about the score. For example, the following direct references to the rule of equality in turn-taking were made by 5-year-old solicitors:

Then I get two turns 'cause you got two turns.
 We get five . . . we each get five turns.
 If you do it long, I'm going to do it long.

Less direct references to this principle often were made when the solicitor kept a scorecard of those turns taken by the possessor. For example:

You get two more. If you've got three, then you get only two more . . .
'cause $3 + 2 = 5$. (Five turns had been agreed upon.)

At times, the solicitor and the possessor engaged in an elaborate process of negotiation in order to determine the number of turns which each should take.

Solicitor: "Then I get two turns 'cause you got two."

Possessor: "No!"

Solicitor: "OK, you get one more and then I get three turns . . .
after you get one more."

Possessor: "After you get three, I'll get four. After I get four, you'll
get five."

Solicitor: "No, I'll get four."

This same type of principle was found to govern 5-year olds' explanations of the distribution and sharing of rewards among peers (Damon, 1977). In a study designed to identify the primary levels of positive justice reasoning utilized by children ages 4 through 8 and the organizing principles underlying each level of reasoning, Damon explored children's positive justice knowledge by asking them questions about the distribution and sharing of rewards among peers in a hypothetical context. In contrast to 4-year olds whose reasoning for their choices did not go beyond what the child wanted or liked, 5-year olds' reasoning was based on the principle of "equal action; that is, everyone should get the same treatment under any circumstances" (p. 81). A greater respect for fairness was demonstrated by 5-year olds than by 4-year olds. Damon suggests that "the major rationale behind

equality is inevitably the child's desire to avoid troublesome consequences, such as everyone's getting mad, fighting and hurting each other" (p. 88).

Changes in the Use of Interpersonal Tactics as a Function
of the Sequence in Which Solicitations Occur

Consideration of the influence of the sequence of occurrence of solicitations on their content not only provides additional insight into the process of soliciting an object from a peer but also provides further information towards the understanding of the developmental changes in the use of instrumental aggression to gain possession of an object.

An analysis of the frequency of occurrence of solicitations according to their sequence within the object transaction interchange indicated that 3-year-old solicitors not only were more likely than 5-year olds to attack their partner at the end of the interchange but also they were more likely to use an attack as their first attempt to obtain possession of the object. Three-year olds appear to utilize attack at a consistently higher rate than 5-year olds throughout the object transaction interchange. When comparisons were made within each age group of the frequency of occurrence of attack as a first solicitation and as a last solicitation, both age groups were found to be more likely to use a physically coercive strategy such as attack at the end of an object transaction interchange than at the beginning. These findings suggest that the acceptance of the use of attack is clearly greater for 3-year olds than for 5-year olds; however, 3-year olds have developed some sense that attack is not as acceptable as other types of strategies.

Five-year olds appear to have developed a more finely differentiated hierarchy in which noncoercive strategies such as basic bids for the object and solicitations which incorporate appeals to the principle of sharing are used before more coercive strategies are tried. This conclusion not only is supported by the finding that attack is used more often as a last bid for the object than as a first bid, but also by the relationship between the type of solicitation utilized and the number of prior attempts to gain control of the object. As the number of prior attempts increased, 5-year-old solicitors were found to decrease their use of more benign strategies such as reference to equality in turn-taking, direct verbal requests for the object, and indirect references to sharing. In contrast, their use of more coercive strategies such as threatening to appeal to authority or appealing to authority increased as the number of prior unsuccessful attempts increased.

Developmental Changes in the Effectiveness of Strategies in Eliciting the Object from Its Possessor

One of the most striking findings in the investigation of this issue is the strong relationship of both the content of the solicitation and the position of its occurrence to its effectiveness in eliciting an object exchange. The nature of this relationship varied with each age group. All of the strategies which were used frequently by 3-year olds, except for attack, had their greatest likelihood of success when they were second bids for the object. Although it is impossible to separate completely the effects of the content of the solicitation from its position of occurrence, these results suggest that

3-year-old possessors were most likely to relinquish the object after the use of any two physically noninjurious solicitations. It appears that as long as the tactic utilized at this point did not threaten bodily harm for the possessor, then its specific content was not a strong determinant of its success. In contrast, attack not only was much more successful than any other tactic in exerting influence on the possessor to relinquish the object, but its likelihood of success also did not vary appreciably as a function of its position. Attack appears to be such a powerful and coercive strategy for 3-year olds that it overwhelmed any effect of timing or sequencing for the possessor. When the possessor was attacked, he submitted and relinquished the object.

For 5-year olds, the effectiveness of the solicitation appeared to be more strongly related to both the content of the solicitation and the position of its occurrence. Some types of solicitations were more likely to be successful as second bids for the object while other types were more successful as third bids. It was not possible to predict the effectiveness of any solicitation by knowing only its position of occurrence or its content. In contrast to the 3-year olds, 5-year-old possessors did not unilaterally relinquish the object when attacked. They were more likely to relinquish the object when attack was used as a second bid than at any other point in the interchange. Overall, attack only was successful one-third of the time for 5-year olds compared to a success rate of 60% for 3-year olds.

Hypothesized Mechanisms for the Decline in the Use of
Aggressive Attacks to Gain Possession of An Object

This observational study was not designed to answer the question of why the use of instrumental attacks decreases from age 3 to age 5 among white males of middle socioeconomic status. There are no data which provide a clear, definitive answer. However, the findings of this study suggest several influences which could account for the decrease in the use of instrumental attacks.

One presumable major influence on the use of instrumental aggressive behavior is the availability of alternative methods by which one can exert influence on a peer. By what other means could the child reach his goal? According to the results of this observational study, when confronted with the task of soliciting an object from a peer, 5-year-old males have a wider range of non-aggressive options from which to choose than 3-year-old males. If a basic request for the object was not successful, 5-year-olds were able to resort to more sophisticated verbally persuasive strategies such as appealing to the principle of equality in turn-taking or limiting their request in order to make it more acceptable. Five-year-old solicitors also may have felt more confident than their younger counterparts that they eventually would obtain possession of the object. Five-year-old possessors utilized a significantly higher proportion of responses that clearly confirmed or acknowledged the solicitor's entitlement to the object. If one feels confident that one can attain his goal, then coercion is less necessary.

Another variable which presumably affects the frequency of occurrence of attacks on another is the reinforcement which the child receives for engaging in that behavior. Within the context of the controlled observational setting of this study, 3-year olds received a very high rate of positive reinforcement when they attacked their peer. Attacking the possessor led to immediate relinquishment of the object at least 60% of the time. In contrast, the frequency of positive reinforcement for the use of attack was significantly less for 5-year olds. The use of an attack led to an immediate object exchange only 30% of the time. Patterson, Littman, and Bricker's (1967) observational study of 3- and 4-year olds also indicates a very high proportion of positive reinforcers for bodily attacks among younger children. Approximately 82% of the observed bodily attacks elicited a positive reinforcer from their victim. These authors also statistically demonstrated that "consequences provided by the victim are a basis for strengthening or suppressing assertive-aggressive behaviors" (p. 22). If a child was positively reinforced for an aggressive act, then he was likely to engage in that particular act again and to choose the same victim.

Maccoby (1980) suggests that as children get older there is a greater interpersonal cost for the use of aggressive behavior with peers. She suggests that fighting with a peer can result in the loss of friendship and peer affection. Because of this, older children are highly motivated to use alternative behaviors.

Another important source of reinforcement for preschool-age

children is provided by adults. There are no formal observational or experimental assessments of the amounts and types of reinforcements received by 3- and 5-year-old aggressors. Experience obtained through consultation to preschool teachers, pilot observations of classrooms for this study, and therapeutic work with parents, however, suggests to this investigator that parents and teachers are far less tolerant and accepting of the use of a bodily attack by a 5-year old than by a 3-year old. Adults appear to expect the 5-year-old child to utilize more prosocial strategies to obtain an object from a peer. Presumably, older children are subject to a higher rate of negative reinforcement for aggressive behavior.

APPENDIX A

INTRODUCTORY LETTER TO PRESCHOOL DIRECTORS

Duke University
Durham
North Carolina

Department of Psychology

Postal Code 27706
Telephone 919--684-4321

In my work with Scott Parker Therapeutic Preschool, a program for emotionally disturbed preschool children, I have been involved in developing programs for classroom management of children who are overly aggressive. While we have had some success with our programs, we have been disappointed with the current behavioral techniques which teachers are encouraged to use in managing aggressive behavior within the classroom. We continue to work toward developing more effective strategies.

In order to better understand children who have extreme problems with aggressive behavior, we feel that it is important to understand the development and the function of aggressive behavior for "normal" children. I am in the process of conducting an observational study of preschool children in their classroom in order to document the developmental changes in the use of aggressive behavior. I am interested, especially, in the use of aggressive behavior during disputes over objects.

In order to be able to make any statements about "typical" preschool children, I need to observe many different groups. I would like very much to talk with you further about my project, and the possibility of observing your three and five year old groups for a short period of time. Working within a preschool setting also, I know how busy you and your staff must be. In return for your assistance to me, I would be pleased to offer my services to you as a psychological consultant in a way that seems useful to your program.

I am looking forward to speaking with you about my interests. I shall contact you by phone later in the week.

Sincerely,

Ms. Hendey Buckley

APPENDIX B

LETTER TO PARENTS

Duke University
Durham
North Carolina

Department of Psychology

Postal Code 27706
Telephone 919--684-4321

Dear Parents,

I am a graduate student at Duke University in the field of child clinical psychology. In my work with children who have behavioral problems, I have been involved in developing programs for the classroom management of children who are overly aggressive. The current techniques which teachers are encouraged to use to manage aggressive behaviors within the classroom seem to be quite inadequate for many children.

In order to understand how to help children who have problems with aggressive behavior, I feel that we must first understand the development of socially appropriate alternative behaviors in children without such problems. I am in the process of conducting an observational study which documents the types of strategies which preschool children typically use to get a toy from a peer. I would like very much to observe your child within this context. In order to enable me to look carefully at these situations, I will need to videotape such interactions. These videotapes shall be used for research purposes only. At no time will your child's name be used in the study nor will these tapes be shown to the public. If you would like, I would be happy to share the videotapes with you.

I would appreciate greatly your cooperation in my project. If you have any further questions, the director or I would be happy to answer them.

I would appreciate it if you would please complete the following items.
Thank you very much.

Sincerely,

Hendey H. Buckley

_____ You may videotape my child.

_____ Please do not videotape my child.

Signed _____

For research purposes, I also need information regarding the maximum level of education obtained by each of you. Again, this information is confidential.

<u>Father</u>		<u>Mother</u>
_____	Did not graduate from high school	_____
_____	High school graduate	_____
_____	Some college training	_____
_____	College graduate	_____

APPENDIX C

REVISED LETTER TO PARENTS

Duke University
Durham
North Carolina

Department of Psychology

Postal Code 27706
Telephone 919--684-4321

Dear Parents,

I am a graduate student at Duke University in the field of child clinical psychology. In my work with children who have behavioral problems, I have been involved in developing programs for the classroom management of children who are overly aggressive. The current techniques which teachers are encouraged to use to help children who have problems with aggressive behaviors do not seem to be very successful.

In order to understand how to help children who have problems with aggressive behavior, I feel that we first need to look at children who DO NOT have such problems. In doing so, we can understand the development of more appropriate and positive social behaviors that may be used in place of aggressive behaviors. I am in the process of conducting an observational study which looks at the types of behaviors which three and five year old boys, without problems of aggressive behavior, typically use to get a toy from a peer. In addition to other boys in your son's classroom, I would like very much to observe your child within this context. In order to enable me to look carefully at these situations, I will need to videotape such interactions. These videotapes shall be used for research purposes only. At no time will your child's name be used in the study nor will these tapes be shown to the public. If you would like, I would be happy to share the videotapes with you.

I would appreciate greatly your cooperation in my project. If you have any further questions, the director/principal or I would be happy to answer them.

I would appreciate it if you would also complete the following items. Thank you.

Sincerely,

Hendey H. Buckley

_____ You MAY videotape my child.

_____ Please DO NOT videotape my child.

Signed _____

For research purposes, I also need information regarding the highest level of education that each of you has obtained. Again, this information is confidential. No names shall be used.

Father

Mother

_____ Did not graduate from high school	_____
_____ High school graduate	_____
_____ Some college training	_____
_____ College graduate	_____
_____ Graduate school	_____

APPENDIX D

CODING CATEGORIES FOR SOLICITATIONS

Coding categories are defined on the basis of the form and the content of the solicitation. In addition to these codes, two categories exist for noting the stylistic characteristics of the solicitation. These stylistic categories should be coded in addition to the content codes, where applicable. The stylistic codes are based on the tone of voice used by the child when he solicits the object from the peer. The two stylistic codes are as follows:

Insistent

The child uses an insistent, angry tone of voice.

Distressed

The child uses a pleading, sorrowful or distressed tone of voice.

Definitions and examples are listed below for each of the solicitation codes.

Basic Solicitations¹

Directs other, positive

The child issues a directive, an imperative for the other to engage in the specific action of giving him the object, sharing it, or giving him a turn. This action must be clearly, directly stated. (If the child includes reference to obligation, then code under "Appeals to principles.")

"Give it to me."

"Let me have a turn."

"Share it."

"Give me a turn."

Requests other

The child phrases the directive as a question in which the actor, verb, and the object of the desired action are clear. Also includes directives where the child asks permission.

"Let me do it, OK?"

"Can I do it?"

"Can I have a turn?"

"Will you give it to me?"

"Will you share it?"

¹ Code the object of the basic solicitation as: object, turn, or share.

Expresses need, desire to other

The child utilizes words such as "want," "need," and "like" to express his basic need, desire for the object, a turn. If the child elaborates or embellishes, then code as "Expresses elaborated need."

"I need it."

"I'd like to use it."

"I want it."

"I'd like a turn."

Directs other, negative

The child issues a directive, an imperative for the other to cease using the object, to cease his turn with it. Directs other to not engage in activity with the object.

"Stop it."

"You can't do it anymore."

"You have to stop now."

"Leave it alone."

Requests other, indirect

The child asks a question in which the desired action "give me the object/a turn" is omitted but the phrase, statement is understood to be a request for an opportunity to play with the object. (Code only if no other category applies.)

"Have you finished?"

"Is it my turn?"

"When do I get to do it?"

"When is it going to be my turn?"

Directs other, unspecific

The child issues a directive to the other that implies the action "give me the object/a turn," but does not clearly state such action. May consist of a phrase or the use of the child's name.

"Come on."

"Hurry up."

"Johnny (pause)."

Elaborate Solicitations¹

Focus on other's interest in the objectRefers to future use of the object

In making a solicitation for the object, the child qualifies his bid by requesting the object in the future. May or may not include a specific time interval. May refer to a more global concept such as "after you're finished."

"After you're all finished?"

"In a minute, can I?"

"Can I do it in a little while?"

"I need it after you're done."

"Give it to me after you do it
once more."

¹If an elaborate solicitation code is used to modify a basic solicitation, code in the appropriate elaborate solicitation code only.

Refers to limited use of the object

In making a solicitation for the object, the child makes reference to limited use of the object. Clarifies that his use, turn will be short-term.

"Just for one time?"

"I'll just do it for one minute."

"Let me do it once."

"Share it for one minute."

"Just give me one turn."

Promises to return the object

The child clearly indicates to the other that he will return the object or will reciprocate with a turn.

"I'll give it back."

"I'll give you another turn."

Offers assistance

The child tries to get the other to relinquish the object by offering to assist him in its operation.

"I'll show you how it works."

"I'll show you how to make it go fast."

Ingratiates other, material

The child makes a statement which is intended to ingratiate, to "win over" the other by offering some material gain.

"I'll give you some of my snack." "I'll let you use my crayons."

"I'll give you a penny."

Ingratiates other, interpersonal - verbal

As defined above, only the child uses flattery or interpersonal gain.

"You're the nicest boy in the class."

"I'll be your friend."

Ingratiates other, interpersonal - physical

As defined above, except the child uses some form of physical demonstration of affection.

The child hugs, kisses, puts his arm around the other in the context of soliciting the object.

Focus on one's affective response to lack of possession of the objectExpresses elaborated desire

The child makes an elaborated or embellished statement of need, desire for the object. Basic need statements modified by adverbs such as "really," "very much," "a lot." May also include elaborate rationale or reference to positive affect upon receipt of the object.

"I want to be the pilot of the spaceship so I can fly to the moon."

"I want it a whole lot."

"I'll really be happy when it's my turn."

"I really want to do it."

Looks distressed

The child's facial expression clearly indicates disappointment, upset or sadness. Note whether the other visually attends to this expression.

Laments

The child makes statements in which he expresses his disappointment, sadness at not being able to use the object. May include self-pitying remarks.

"I feel sad."

"I'm always last."

Cries, whines

The child produces tears or whines. If the child does not emit sounds while crying, note if the other visually attends to his face.

Focus on disguising the solicitation, outwitting the otherDistracts other

The child makes statements which are directed at distracting the other, diverting his attention from the object. May include attempts to interest him in another object.

"Don't you have to go to the bathroom?" (Used by a three year old!)

"Hey, Mrs. X just brought in the water toys!"

"Hey, look at the tower that Johnny just built!"

Proposes fantasy

The child proposes some type of fantasy or dramatic play in which his proposed character, role would allow him to gain control of the object.

"I know (pause) Let's pretend that we're flying in the spaceship.

You get sick, so I have to be the pilot."

Tricks other¹

The child uses some form of clear deception to solicit the object from the other. This must include some form of distortion of the truth which is malicious in nature.

"Hey, it's outside time now. You'd better go get your coat." (It is not time to go outside.)

¹Shure and Spivack, 1975.

Focus on appeal to principles

Implies friendship obligation

The child makes a statement which indirectly refers to the principle that, because the peer is his friend, he is obligated to allow him to use the object. The obligation is implied rather than stated directly.

"I thought we were friends."

"I guess we're not really friends."

"Aren't we friends?"

Asserts right to use¹

The child makes a positive assertion of his right to use the object, have a turn with it. Child expresses the concept that he is entitled to it. (If the child focuses on the other's obligation, code elsewhere.)

"It's my turn."

"I get it next."

"I get to do it, too."

"That's for me, too."

Expresses inequity

The child makes general statements which focus upon the concept that he, as the solicitor, has been treated inequitably. Must refer to some type of general injustice or inequity which is related to not having used the object yet. If the child makes a reference to his right to turns of equal length or to a specified number of turns, then code as states rule of equality or keeps score.

"I haven't had a turn yet."

"You've had it for a long time now."

"You don't need to do it all."

"You're not letting me do it, too." "You're hogging it."

Implies obligation to reciprocate

The child makes indirect reference to the principle that if one shares, then the other should reciprocate.

"I let you use my truck yesterday."

"I shared my blocks with you."

Implies obligation to share, take turns

The child makes a statement of the other's obligation to relinquish the object, but does not include the terms "share" or "turn." This is a less direct appeal to the rule for sharing, turn-taking than "Invokes rule."

"You have to let me play, too."

"You have to let me do it."

"You gotta give it to me."

"You're going to have to give it to me."

¹Furby, L., personal communication.

Evaluates other's actions¹

The child makes an evaluative statement in which he judges the other by his actions. Excludes name-calling and verbal derogation.

"You're not being fair."

"You're being bad."

"That's not nice."

"You're being mean."

Invokes rule of friendship obligation

The child makes a direct statement of the rule that because the two are friends, the other should allow him to use the object.

"Friends are supposed to share." "You're my friend (pause) you should give it."

Invokes rule of sharing, turn-taking

The child issues a clear statement that the other is obligated to share or to take turns. Must include the terms "share," "turn" as well as some reference to obligation such as "supposed to," "have to," "should," "got to."

"You got to share it."

"You have to give me a turn."

"We're supposed to take turns."

"You have to take turns."

Invokes adult-imposed rule of sharing, turn-taking

Defined as above, however, the child incorporates an adult figure as the source of the rule.

"The teacher says that we have to share."

"My mother says to take turns."

States violation of rule of sharing, turn-taking

The child makes a direct statement that the other is violating the rule of sharing, turn-taking. He must state that the other is not sharing, taking turns.

"You're not sharing."

"You're not giving me a turn."

Invokes rule of reciprocity

The child makes direct reference to the principle that if one shares, then the other should reciprocate.

"I let you use my blocks, so you have to let me do it."

"I always let you play with mine (pause) you're supposed to let me play with yours."

Proposes sharing

The child proposes some type of general plan for mutual but not concurrent use of the object.

"I know (pause) we can both do it." "Let's share it."

¹Lakin, Lakin, and Costanzo, 1978.

States or refers to rule of "equal-action"¹

The child makes a statement that directly states or refers to the concept that both children should have possession of the object for equal lengths of time or for equal number of turns.

"You got to do it 8 times so I
get to do it 8 times."

"Then I get 2 turns cause you
got 2 turns."

Keeps/argues score

The child keeps track of the number of turns which the possessor has had with the object and/or the number of remaining turns before object exchange should occur. May also refer to the length of possession.

"You get 2 more. If you've got
3, then you only get 2 more
(pause) cause $3 + 2 = 5$."

"You already had 2 turns."

Focus on negative consequences of noncompliance for the other

Threatens personal rejection

The child makes a statement in which he threatens to reject the other.

"I won't be your friend . . ."

"I won't let you play with me
anymore."

Threatens appeal to authority

The child makes a statement in which he threatens to tell some adult of the other's wrongdoings or injustice; he threatens to solicit an adult's intervention.

"I'm going to tell the teacher."

"I'm going to tell on you."

"I'm going to tell that lady on
you."

Threatens negative reciprocity

The child makes statements in which he threatens that if the other does not share the object, he will not share objects in the future. May be either a direct or an indirect reference.

"I won't let you play with my
toys anymore."

"If you don't let me do it, then I
won't give you a turn with my
things."

Threatens to take object

The child makes a statement in which he threatens to take, to grab the object from the other.

"If you don't give it, I'll take it." "I'm going to take it . . ."

¹Damon, 1977.

Threatens to attack other

The child makes a statement in which he threatens to harm, to attack the other.

"I'm going to hit you."

"If you don't give it, I'll kick you."

Rejects, derogates other

The child makes a statement in which he personally rejects the other. Or the child makes a statement in which he derogates the other. Includes name-calling.

"I'm not your friend anymore."

"I don't like you anymore."

"You're stupid."

"Dummy."

Appeals to authority

The child solicits the investigator's intervention by calling to her or informing her of the other's wrongdoings or injustices to him.

"Hey, he won't share with me."

"Hey, it's my turn now."

"Tell him to let me do it."

Glares, scowls at other

Child clearly demonstrates anger through his facial or visual expression. Code only if the other visually attends to the expression.

Gestures to take object

The child reaches for the object but does not make contact with it.

Gestures to attack other

The child makes some type of gesture with his body to attack the other but does not make contact with the other.

The child raises his fist but does not hit the other.

The child reaches out to grab the other's hair but does not do so.

Takes object

The child places his hand on the lever when it is clearly within the possession of the other. Code if the child places his hand on top of the possessor's hand on the lever but does not exert force on him. The child may or may not succeed in obtaining the object.

Attacks other

The child uses his body to make direct, forceful contact with another child's body. Includes hits, punches, kicks, shoves, pulls hand, arm, pokes, shoves.

Struggles

The solicitor and the possessor engage in conflict over the control of the lever for at least 3 seconds. This may consist of a series of rapidly executed attacks by one or both children or an extended Take which escalates.

OtherRefers to status

The child makes reference to his status as a way of influencing the other to give him the toy.

"I'm the leader."

"I'm the biggest."

"I'm the oldest."

Please

The child uses the word please by itself or in conjunction with another solicitation category.

"Please (pause)."

"Please can I have a turn."

APPENDIX E

CODING CATEGORIES FOR POSSESSOR-RESPONSES

At least one of the following criteria must be met for the child to be defined as the POSSESSOR: the child must hold the lever by himself unchallenged; the child lets go of the lever but remains within proximity of it while the plane is flying; the child makes some direct verbalization of his claim on the object or his possession of it.

Relinquishes possession

At least one of the following criteria must be met: the child moves out of proximity (an arm's reach) of the control box; the child stops the spaceship and removes his hand from the lever. Code complies - relinquishes possession if the child releases the object within 10 seconds of a solicitation. Code unsolicited - relinquishes possession if the child releases the object after more than 10 seconds have elapsed.

Does not acknowledge other's solicitation

The child does not make a codable verbal or physical response to the other's solicitation within 10 seconds or before the next solicitation, whichever occurs first.

Confirms solicitor's right to use¹

The child verbally indicates that the other is entitled to use the object. May include granting future use of the object or some form of clear agreement to let the other use the object. If the object changes hands, then code as an object exchange.

"OK, you can do it, too."

"Your turn soon."

Proposes sharing

The child proposes some plan for mutual but not concurrent use of the object.

"I know, we can share it."

"We both get turns."

Solicits continued use

The child asks the other for permission to continue to use the object.

"Can I do it one more time?"

"One more time, OK?"

¹Furby, L., personal communication.

Imposes delay - general

The child responds to the other's solicitation by imposing a delay, telling the other to wait. Does not clearly indicate that the other is entitled to the object.

"Wait a minute."

"I'm almost finished."

Imposes delay - fantasy

The child imposes delay through the use of fantasy with the object.

"Wait (pause) wait (pause) he's run out of gas. First he has to fill up his tanks with gas."

Distracts other

Same as solicitation code.

Verbally refuses

The child makes a simple statement of refusal to comply with the other's solicitation.

Solicitor: "Let me have it."

Possessor: "No!"

Verbally refuses with account

The child responds to the other's solicitation with a refusal but provides some type of justification, rationale for his lack of compliance.

"I'm not finished yet."

"I just got it."

Expresses inequity

Same as solicitation code.

Asserts right to turn, use

Same as solicitation code.

Refers to rule of equality

Same as solicitation code.

Keeps, argues score

Same as solicitation code.

Derogates

Same as solicitation code.

Threatens appeal

Same as solicitation code.

Attacks other

Same as solicitation code.

Struggles

Same as solicitation code.

Solicits other's indirect control

The child asks or directs the other to tell him what to do with the object, to direct control of the object through verbalizations.

"You tell me when to make it land." "You tell me what to do."

Simultaneous use

Same as solicitation code.

States rule, rule violation

The child makes some statement of a rule or rule violation in relation to solicitation of objects.

"You're not supposed to grab." "The teacher says to ask."

Evaluates the other's actions¹

The child makes an evaluative comment in which he judges the other by his actions. Excludes name-calling and derogation.

"You're not being fair." "That's not nice."

¹Lakin, Lakin, and Costanzo, 1978.

APPENDIX F
TABLES 7 THROUGH 15

Table 7

Means and Standard Deviations for Frequency of Occurrence of Solicitation
Categories by Age Groups

Categories	Three year olds		Five year olds		t (39)	p <
	M	SD	M	SD		
Basic						
<u>Direct</u>	10.05	9.13	4.40	3.91	2.54	.0152
Directs other, positive	4.90	5.35	2.65	3.20		
Requests other	2.65	4.98	1.35	2.25		
Expresses need	2.50	4.50	.40	.50		
<u>Indirect</u>	1.15	1.75	1.95	2.24		
Directs other, negative	.45	.94	.55	1.14		
Requests, indirect	.55	1.43	.70	.92		
Directs, unspecific	.15	.37	.70	1.59		
Elaborate						
A. <u>Focus on other's interest</u>	.40	.82	.90	1.45		
Mitigate loss	.15	.37	.80	1.44	1.96	.0572
Refers to future use	.10	.31	.30	.66		
Refers to limited use	.05	.22	.45	1.39		
Promises to return	--	--	.05	.22		
Advantage to other	.25	.72	.10	.45		
Offers assistance	.10	.31	.10	.45		
Ingratiates, material	--	--	--	--		
Ingratiates, interpersonal	.15	.67	--	--		

Table 7 (continued)

Categories	Three year olds		Five year olds		t (39)	p <
	M	SD	M	SD		
Invokes adult rule	.20	.89	.15	.67		
States rule violation	--	--	--	--		
Invoke - reciprocity	--	--	--	--		
Proposes sharing	--	--	.15	.67		
Reference to "Equal-Action"	.15	.67	2.70	4.49		
States, refers to rule	.15	.67	1.50	2.67		
Keeps, argues score	--	--	1.20	2.21	2.51	.0163
E. Focus on negative - verbal	.30	.73	1.00	2.92		
Threatens negative, non-body	.20	.70	.85	2.54		
Threatens personal rejection	.20	.70	.05	.22		
Threatens appeal - authority	--	--	.80	2.55		
Threatens negative reciprocity	--	--	--	--		
Threatens to take object	--	--	--	--		
Threatens negative, body	.05	.22	--	--		
Threatens attack	.05	.22	--	--		
Negative, verbal	.05	.22	.15	.49		
Rejects other	--	--	.05	.22		
Appeals to authority	.05	.22	.10	.31		
F. Focus on negative - physical	14.85	11.72	10.40	6.91		
Implies threat	--	--	.10	.31		
Glares, scowls	--	--	--	--		
Angry gesture	--	--	.10	.31		
Threatens negative, non-body	3.60	3.93	2.35	1.76		
Gestures to take	3.60	3.93	2.35	1.76		
Threatens negative, body	.05	.22	.05	.22		
Gestures to attack	.05	.22	.05	.22		

Table 7 (continued)

Categories	Three year olds		Five year olds		t (39)	p <
	M	SD	M	SD		
B. <u>Focus on one's affect</u>						
<u>Positive</u>	.10	.31	.05	.22		
Expresses elaborate desire	--	--	.05	.22		
More negative	--	--	.05	.22		
Laments	.10	.31	--	--		
Cries, whines	--	--	--	--		
Cries, whines	.10	.31	--	--		
C. <u>Focus on outwitting other</u>						
Creative, clever	.20	.89	.15	.37		
Distracts other	.20	.89	.15	.37		
Proposes fantasy	.20	.89	.10	.31		
Deceptive	--	--	.05	.22		
Tricks other	--	--	--	--		
Tricks other	--	--	--	--		
D. <u>Focus on appeal to principles</u>	6.60	10.35	8.55	6.00		
Indirect - friendship	--	--	--	--		
Implies friendship obligation	--	--	--	--		
Indirect - sharing	6.20	10.46	5.50	3.75		
Asserts right to use	1.80	2.28	.55	1.39		
Asserts right to turn	4.20	10.31	4.55	3.94		
Implies obligation - reciprocate	--	--	--	--		
Implies obligation - share	--	--	--	--		
Evaluates other's actions	--	--	--	--		
Expresses inequity	.20	.62	.40	.60		
Direct friendship	.05	.22	--	--		
Invokes rule - friendship	.05	.22	--	--		
Direct - sharing	.20	.89	.35	1.35		
Invokes rule	--	--	.05	.22		

Table 7 (continued)

Categories	Three year olds		Five year olds		t (39)	p <
	M	SD	M	SD		
Negative, non-body	6.20	5.12	5.80	4.82		
Takes object	6.20	5.12	5.80	4.82		
Negative, body	5.00	5.81	2.10	2.69	2.02	.0500
Attacks other	3.95	4.50	1.75	2.30		
Struggles	1.05	1.67	.35	.59		
G. <u>Verbal - physical</u>	1.55	2.87	.15	.37		
Verbal - gesture take	.75	1.12	.05	.23	2.75	.0092
Verbal - take	.80	1.94	.10	.31		
Please	.05	.22	.15	.49		
Mutual take	.20	.41	.15	.37		
Simultaneous use	.30	.92	.55	.76		
Total	35.40	21.44	28.40	15.07		

Table 8

Means and Standard Deviations for the Percentage Contribution of Solicitation
Categories to the Total Number of Solicitations

Categories	Three year olds		Five year olds		t (39)	p <
	M %	SD	M %	SD		
Basic						
<u>Direct</u>	28.71	16.95	16.01	12.41	2.70	.0102
Directs other, positive	15.03	14.94	8.84	10.87		
Requests other	7.16	11.04	5.44	8.08		
Expresses need	6.52	10.42	1.73	2.44		
<u>Indirect</u>	4.30	9.00	7.15	8.26		
Directs other, negative	1.31	2.85	1.58	3.31		
Requests, indirect	2.63	8.99	3.75	7.71		
Directs, unspecific	.36	.96	1.82	4.19		
Elaborate						
A. <u>Focus on other's interest</u>	1.35	2.86	3.68	6.85		
Mitigate loss	.70	1.81	3.06	6.57		
Refers to future use	.57	1.76	.96	2.10		
Refers to limited	.13	.59	2.04	6.57		
Promises to return	--	--	.07	.29		
Advantage to other	.65	1.62	.62	2.80		
Offers assistance	.45	1.43	.62	2.80		
Ingratiates, material	--	--	--	--		
Ingratiates, interpersonal	.20	.88	--	--		

Table 8 (continued)

Categories	Three year olds		Five year olds		t (39)	p <
	M %	SD	M %	SD		
<u>B. Focus on one's affect</u>						
Positive	.42	1.28	.14	.64		
Expresses elaborate desire	--	--	.14	.64		
More negative	--	--	.14	.64		
Laments	.42	1.28	--	--		
Cries, whines	--	--	--	--		
Cries, whines	.42	1.28	--	--		
<u>C. Focus on outwitting other</u>						
Creative, clever	.51	2.29	.48	1.23		
Distracts other	.51	2.29	.48	1.23		
Proposes fantasy	.51	2.29	.26	.82		
Deceptive	--	--	.22	.97		
Tricks other	--	--	--	--		
Tricks other	--	--	--	--		
<u>D. Focus on appeal to principles</u>	17.65	21.25	30.28	20.92		
Indirect - friendship	--	--	--	--		
Implies friendship obligation	--	--	--	--		
Indirect - sharing	15.91	21.05	20.10	14.83		
Asserts right to use	5.42	6.43	1.78	4.03		
Asserts right to turn	9.88	20.97	16.98	16.20		
Implies obligation - reciprocate	--	--	--	--		
Implies obligation - share	--	--	--	--		
Evaluates other's actions	--	--	--	--		
Expresses inequity	.60	1.87	1.34	2.00		
Direct friendship	.17	.77	--	--		
Invokes rule - friendship	.17	.77	--	--		
Direct - sharing	1.18	5.26	1.45	2.05		
Invokes rule	--	--	.19	.86		

Table 8 (continued)

Categories	Three year olds		Five year olds		t (39)	p <
	M %	SD	M %	SD		
Invokes adult rule	1.18	5.26	.63	2.80		
States rule violation	--	--	--	--		
Invoke - reciprocity	--	--	--	--		
Proposes sharing	--	--	.63	2.80		
Reference to "Equal-Action"	.39	1.77	8.74	16.47		
States, refers to rule	.39	1.77	5.33	11.36	2.25	.0302
Keeps, argues score	--	--	3.40	5.71		
E. <u>Focus on negative - verbal</u>	1.20	2.78	1.94	4.53		
Threatens negative, non-body	.80	2.57	1.51	4.03		
Threatens personal rejection	.80	2.57	.21	.97		
Threatens appeal - authority	--	--	1.30	3.99		
Threatens negative reciprocity	--	--	--	--		
Threatens to take object	--	--	--	--		
Threatens negative, body	.13	.57	--	--		
Threatens attack	.13	.57	--	--		
Negative, verbal	.27	1.24	.43	1.41		
Rejects other	--	--	.07	.29		
Appeals to authority	.27	1.24	.36	1.33		
F. <u>Focus on negative - physical</u>	40.26	13.51	35.80	14.81		
Implies threat	--	--	--	--		
Glares, scowls	--	--	--	--		
Angry gesture	--	--	--	--		
Threatens negative, non-body	11.36	7.37	9.33	6.61		
Gestures to take	11.36	7.37	9.33	6.61		
Threatens negative, body	.21	.93	.07	.29		
Gestures to attack	.21	.93	.07	.29		

Table 8 (continued)

Categories	Three year olds		Five year olds		t (39)	p <
	M %	SD	M %	SD		
Negative, non-body	16.79	10.23	19.20	12.79		
Takes object	16.79	10.23	19.20	12.79		
Negative, body	11.91	11.93	7.03	6.92		
Attacks other	9.19	9.29	5.98	5.92		
Struggles	2.72	3.93	1.04	1.84		
G. Verbal - physical	4.81	11.19	.34	.91		
Verbal - gesture take	2.17	4.31	.17	.77	2.05	.0475
Verbal - take	2.64	7.58	.17	.55		
Please	.17	.77	.71	2.22		
Mutual take	.84	1.99	.87	2.62		
Simultaneous use	.64	1.79	2.59	3.70	2.12	.0405

Table 9

Means and Standard Deviations for Percentage Contribution of Possessor-Response
Categories to Total Number of Possessor-Responses

Categories	Three year olds		Five year olds		t (39)	p <
	M %	SD	M %	SD		
<u>Object exchanges</u>						
Complies - relinquish possession	53.69	29.63	40.49	23.84		
Unsol. - relinquish possession	40.67	23.40	32.54	19.75		
	13.02	15.91	7.95	8.38		
<u>Acknowledge other's right to possession</u>						
Confirms right to use	2.56	3.69	6.05	6.13	2.18	.0354
Proposes sharing	1.39	3.07	2.64	4.46		
Solicits continued use	.20	.63	.56	2.48		
	.97	1.85	2.86	4.48		
<u>Forestalls other's possession</u>						
Delay	5.20	9.60	13.10	8.10		
Imposes delay	4.49	9.03	12.88	8.21	2.56	.0146
Imposes delay - fantasy	4.49	9.03	7.82	8.20		
Distracts other	--	--	5.06	8.24		
	.71	3.19	.30	.93		
<u>Simply refuses to relinquish</u>						
Verbally refuses	14.37	22.32	6.31	5.54		
Verbally refuses with account	9.64	15.92	4.70	5.26		
	4.73	7.77	1.61	2.68		
<u>Refusal - appeal to principle</u>						
General equity	4.90	6.76	11.65	15.16		
Expresses inequity	4.20	6.40	2.37	4.53		
Asserts right to turn	--	--	.62	1.89		
Equal-Action principle	4.20	6.40	1.76	3.88		
Refers to rule of equality	.70	2.16	9.27	14.90	2.55	.0150
Keeps, argues score	.38	1.72	4.54	8.09		
	.31	1.40	4.74	9.99		

Table 9 (continued)

Categories	Three year olds		Five year olds		t (39)	p <
	M %	SD	M %	SD		
<u>Refusal - negative consequences</u>	15.90	17.16	11.15	12.67		
Verbal	--	--	.41	1.33		
Derogates	--	--	.28	.87		
Threatens appeal	--	--	.13	.59		
Physical	15.90	17.16	10.73	11.99		
Attacks other	11.87	13.70	8.70	9.74		
Struggles	4.03	6.52	2.03	4.63		
<u>Allows other control</u>	2.36	4.58	9.51	13.44	2.25	.0302
Solicit indirect control	1.43	3.62	5.97	12.46		
Simultaneous use	.94	2.49	3.54	5.36		
<u>Reference to rule violation - solicitation</u>	--	--	--	--		
States rule/violation	--	--	--	--		
Evaluates other's actions	--	--	--	--		

Table 10

Means and Standard Deviations for Frequency of Occurrence of
Possessor-Response Categories by Age Groups

Categories	Three year olds		Five year olds		t (39)	p <
	M	SD	M	SD		
<u>Object exchanges</u>	14.15	11.70	8.35	5.79	1.99	.0542
Complies - relinquish possession	11.10	9.66	6.75	4.79		
Unsol. - relinquish possession	3.05	4.16	1.60	1.64		
<u>Acknowledge other's right to possession</u>	.75	1.16	1.25	1.29		
Confirms right to use	.30	.57	.50	.76		
Proposes sharing	.10	.31	.05	.22		
Solicits continued use	.35	.67	.70	1.17		
<u>Forestalls other's possession</u>	1.05	2.06	2.60	1.51		
Delay	.90	1.94	2.50	1.46	2.59	.0135
Imposes delay	.90	1.94	1.45	1.19		
Imposes delay - fantasy	--	--	1.05	1.64		
Distracts other	.15	.67	.10	.31		
<u>Simply refuses to relinquish</u>	2.00	1.78	1.40	1.27		
Verbally refuses	1.40	1.61	1.05	1.48		
Verbally refuses with account	.60	.68	.35	.59		
<u>Refusal - appeal to principle</u>	1.05	1.36	3.00	4.70		
General equity	.90	1.33	.40	.75		
Expresses inequity	--	--	.15	.49		
Asserts right to turn	.90	1.33	.25	.55		
Equal-Action principle	.15	.49	2.60	4.59	2.37	.0229
Refers to rule of equality	.05	.22	1.15	2.39		
Keeps, argues score	.10	.45	1.45	3.20		

Table 10 (continued)

Categories	Three year olds		Five year olds		t (39)	p <
	M	SD	M	SD		
<u>Refusal - negative consequences</u>	3.55	4.03	2.50	3.63		
Verbal	--	--	.15	.49		
Derogates	--	--	.10	.31		
Threatens appeal	--	--	.05	.22		
Physical	3.55	4.03	2.35	3.23		
Attacks other	2.50	2.69	1.95	2.74		
Struggles	1.05	1.67	.40	.68		
<u>Allows other control</u>	.55	1.39	1.85	2.87		
Solicit indirect control	.30	.80	1.30	2.83		
Simultaneous use	.25	.72	.55	.76		
<u>Reference to rule violation - solicitation</u>	--	--	--	--		
States rule/violation	--	--	--	--		
Evaluates other's actions	--	--	--	--		

Table 11

Means and Standard Deviations for Percentage Contribution of Solicitation Categories to the Total Number of Solicitations Used Initially in an Object Transaction Interchange

Categories	Three year olds		Five year olds		t (39)	p <
	M %	SD	M %	SD		
Basic						
Direct	22.76	22.32	19.02	24.15		
Indirect	3.76	11.23	6.11	11.90		
Elaborate						
A. <u>Focus on other's interest</u>						
Mitigate loss	--	--	5.91	13.61	1.94	.0597
Advantage - other	--	--	--	--		
B. <u>Focus on one's affect</u>						
Positive	--	--	--	--		
C. <u>Focus on outwitting other</u>						
Creative, clever	1.42	4.45	.33	1.49		
Deceptive	--	--	--	--		
D. <u>Focus on appeal to principles</u>						
Indirect - friendship	--	--	--	--		
Indirect - sharing	14.91	25.98	25.92	24.98		
Direct - friendship	--	--	--	--		
Direct - sharing	--	--	.83	3.73		
Reference to "Equal-Action"	1.25	5.59	9.76	20.32		

Table 11 (continued)

Categories	Three year olds		Five year olds		t (39)	p <
	M %	SD	M %	SD		
E. <u>Focus on negative - verbal</u>						
Threatens negative, non-body	--	--	--	--		
Threatens negative, body	--	--	--	--		
Negative, verbal	--	--	--	--		
F. <u>Focus on negative - physical</u>						
Implies threat	--	--	--	--		
Gestures to take	13.65	22.68	8.11	12.84		
Gestures to attack	--	--	--	--		
Takes object	23.24	21.79	16.15	14.71		
Attacks/struggles	11.41	13.30	2.67	6.13	2.67	.0111
G. <u>Verbal - physical</u>						
Verbal - gesture take	1.84	3.35	--	--	2.45	.0189
Verbal - takes object	3.98	10.41	--	--		
Mutual take	.50	2.24	.94	2.95		
Simultaneous use	1.05	3.66	2.54	6.61		
Please	.24	1.06	1.25	5.59		
Verbal	44.34	28.75	69.59	21.87	3.13	.0034
Physical	49.85	27.34	30.41	21.87	2.48	.0176
Verbal - physical	5.81	13.09	--	--	1.98	.0544

Table 12

Means and Standard Deviations for the Percentage Contribution of Solicitation Categories to the Total Number of Solicitations Used Last in an Object Transaction Interchange

Categories	Three year olds		Five year olds		t (39)	p <
	M %	SD	M %	SD		
Basic						
Direct	14.32	16.91	16.49	24.85		
Indirect	.91	2.23	3.67	6.72		
Elaborate						
A. <u>Focus on other's interest</u>						
Mitigate loss	--	--	--	--		
Advantage - other	.23	1.02	1.67	7.45		
B. <u>Focus on one's affect</u>						
Positive	--	--	--	--		
C. <u>Focus on outwitting other</u>						
Creative, clever	.33	1.49	.83	2.62		
Deceptive	--	--	--	--		
D. <u>Focus on appeal to principles</u>						
Indirect - friendship	--	--	--	--		
Indirect - sharing	8.96	17.97	18.49	19.87		
Direct - friendship	--	--	--	--		
Direct - sharing	--	--	--	--		
Reference to "Equal-Action"	--	--	3.08	7.65		

Table 12 (continued)

Categories	Three year olds		Five year olds		t (39)	p <
	M %	SD	M %	SD		
E. <u>Focus on negative - verbal</u>						
Threatens negative, non-body	--	--	3.33	14.91		
Threatens negative, body	--	--	--	--		
Negative, verbal	1.67	7.45	.83	3.73		
F. <u>Focus on negative - physical</u>						
Implies threat	--	--	--	--		
Gestures to take	14.61	23.85	12.04	22.69		
Gestures to attack	--	--	--	--		
Takes object	20.04	24.77	25.52	27.92		
Attacks/struggles	33.79	33.39	13.42	23.18	2.24	.0309
G. <u>Verbal - physical</u>						
Verbal - gesture take	2.06	3.93	--	--	2.35	.0244
Verbal - take	2.15	7.16	--	--		
Mutual take	.98	3.06	--	--		
Simultaneous use	--	--	.62	2.79		
Verbal	26.42	21.50	48.39	30.39	2.64	.0120
Physical	69.38	24.45	51.61	30.39	2.04	.0486
Verbal - physical	4.21	9.99	--	--		

Table 13

Means and Standard Deviations for the Percentage Contribution of Solicitation Categories to the Total Number of Last Solicitations by the Average Three Year Old Dyad, According to Chain Length^a

Categories	Chain = 2 (Ss = 14)		Chain = 3, 4 (Ss = 16)		Chain $\geq$ 5 (Ss = 9)	
	M %	SD	M %	SD	M %	SD
Basic						
Direct	22.17	25.58	25.92	34.47	32.41	44.18
Indirect	.89	3.34	2.14	5.95	--	--
Elaborate						
A. <u>Focus on other's interest</u>						
Mitigate loss	--	--	--	--	--	--
Advantage - other	--	--	1.25	5.00	--	--
B. <u>Focus on one's affect</u>						
Positive	--	--	--	--	--	--
C. <u>Focus on outwitting other</u>						
Creative, clever	--	--	--	--	--	--
Deceptive	--	--	--	--	--	--
D. <u>Focus on appeal to principles</u>						
Indirect - friendship	--	--	--	--	--	--
Indirect - sharing	9.23	20.16	13.75	30.14	9.44	20.68
Direct - friendship	--	--	--	--	--	--
Direct - sharing	--	--	--	--	--	--
Reference to "Equal-Action"	--	--	--	--	--	--

Table 13 (continued)

Categories	Chain = 2 (Ss = 14)		Chain = 3, 4 (Ss = 16)		Chain $\geq$ 5 (Ss = 9)	
	M %	SD	M %	SD	M %	SD
E. Focus on negative - verbal						
Threatens negative, non-body	--	--	--	--	--	--
Threatens negative, body	--	--	--	--	--	--
Negative, verbal	--	--	6.25	25.00	--	--
F. Focus on negative - physical						
Implies threat	--	--	--	--	--	--
Gestures to take	19.98	35.20	10.03	25.76	19.26	32.74
Gestures to attack	--	--	--	--	--	--
Takes object	11.60	15.33	10.27	25.52	8.33	17.68
Attacks/struggles	30.99	35.22	25.52	36.34	30.56	37.95
G. Verbal - physical						
Verbal - gesture take	1.79	6.68	2.00	6.38	--	--
Verbal - take	2.46	5.07	--	--	--	--
Mutual take	.89	3.34	--	--	--	--
Simultaneous use	--	--	--	--	--	--
Verbal	32.29	25.36	49.32	41.01	41.85	42.98
Physical	63.46	28.83	48.68	42.37	58.15	42.98

^aNumber of solicitations used within an object transaction interchange.

Table 14

Means and Standard Deviations for the Percentage Contribution of Solicitation Categories to the Total Number of Last Solicitations by the Average Five Year Old Dyad, According to Chain Length^a

Categories	Chain = 2 (Ss = 14)		Chain = 3, 4 (Ss = 17)		Chain ≥ 5 (Ss = 15)	
	M %	SD	M %	SD	M %	SD
Basic						
Direct	22.10	36.54	24.51	39.14	15.00	35.10
Indirect	3.17	9.17	1.18	4.85	6.67	25.82
Elaborate						
A. <u>Focus on other's interest</u>						
Mitigate loss	--	--	--	--	--	--
Advantage - other	--	--	--	--	6.67	25.82
B. <u>Focus on one's affect</u>						
Positive	--	--	--	--	--	--
C. <u>Focus on outwitting other</u>						
Creative, clever	--	--	1.47	6.06	--	--
Deceptive	--	--	--	--	--	--
D. <u>Focus on appeal to principles</u>						
Indirect - friendship	--	--	--	--	--	--
Indirect - sharing	18.65	36.95	21.57	33.60	7.78	20.77
Direct - friendship	--	--	--	--	--	--
Direct - sharing	--	--	--	--	--	--
Reference to "Equal-Action"	9.52	27.51	1.96	8.08	3.33	12.91

Table 14 (continued)

Categories	Chain = 2 (Ss = 14)		Chain = 3, 4 (Ss = 17)		Chain ≥ 5 (Ss = 15)	
	M %	SD	M %	SD	M %	SD
E. <u>Focus on negative - verbal</u>						
Threatens negative, non-body	--	--	--	--	4.44	17.21
Threatens negative, body	--	--	--	--	--	--
Negative, verbal	--	--	--	--	6.45	1.67
F. <u>Focus on negative - physical</u>						
Implies threat	--	--	--	--	--	--
Gestures to take	4.17	10.72	14.90	28.21	12.22	28.50
Gestures to attack	--	--	--	--	--	--
Takes object	26.90	34.43	26.86	33.10	25.56	41.24
Attacks/struggles	15.48	29.57	7.54	15.14	13.33	29.68
G. <u>Verbal - physical</u>						
Verbal - gesture take	--	--	--	--	--	--
Verbal - take	--	--	--	--	--	--
Mutual take	--	--	--	--	--	--
Simultaneous use	--	--	--	--	--	--
Verbal	53.45	40.56	50.69	42.79	45.56	46.49
Physical	46.55	40.56	49.31	42.79	54.44	46.49

^aNumber of solicitations used within an object transaction interchange.

Table 15

Conditional Probability of Success for Solicitations by Their Position Within
Object Transaction Interchanges^{a, b}

Categories	Age in years	Positions					Positions greater than 10
		Position 1	Position 2	Position 3	Position 4	5-10	
Direct	3	0.0690	0.3750	0.3125	0.1333	0.2069	0.0000
	5	0.1538	0.5000	0.2941	* _c	0.2000	*
Indirect-sharing	3	0.0154	0.4074	0.2857	*	0.1739	*
	5	0.3809	0.1818	0.4167	0.1667	0.1500	*
$\frac{z}{p}$		2.29					
		.0220					
Gesture to take	3	0.2593	0.4762	*	*	0.2000	*
	5	0.2500	*	0.4000	*	0.3000	*
Take	3	0.3860	0.4074	0.1429	*	0.0667	*
	5	0.3548	0.3704	0.6250	*	0.2000	0.0667
$\frac{z}{p}$				2.69			
				.0072			
Attack	3	0.6562	0.6538	0.7272	0.6000	0.5263	*
	5	0.1667	0.5455	*	*	0.3000	*
Total	3	0.2857	0.4485	0.3516	0.3390	0.2095	0.0930
	5	0.2550	0.3153	0.3684	0.1875	0.1927	0.0533
$\frac{z}{p}$			2.22				
			.0264				

^aOnly categories with a frequency of at least 10 at a given position within the interchanges are listed.

^bOnly those $\frac{z}{p}$ ratios whose p value equals .05 or less are reported.

^c* = Frequency of occurrence is less than 10 at this position.

REFERENCES

- Altmann, J. Observational study of behavior: Sampling methods. Behaviour, An International Journal of Comparative Ethology, 1974, 49, 227-267.
- Alvy, K. T. The development of listener adapted communications in grade-school children from different social class backgrounds. Genetic Psychology Monographs, 1973, 87, 33-104.
- Appel, M. H. Aggressive behavior of nursery school children and adult procedures in dealing with such behavior. Journal of Experimental Education, 1942, 11, 185-189.
- Bakeman, R. Untangling streams of behavior: Sequential analyses of observation data. In G. P. Sackett (Ed.), Observing behavior: Vol. II, Data collection and analysis methods. Baltimore: University Park Press, 1978.
- Bakeman, R., Cairns, R., & Appelbaum, M. Note on describing and analyzing interactional data: Some first steps and common pitfalls. In R. Cairns (Ed.), The analysis of social interactions: Methods, issues, and illustrations. Hillsdale, N.J.: Lawrence Erlbaum Associates, 1979.
- Blurton-Jones, N. G. An ethological study of some aspects of social behavior of children in nursery school. In D. Morris (Ed.), Primate ethology. Chicago: Aldine, 1967.
- Body, M. Patterns of aggression in the nursery school. Child Development, 1955, 26, 5-11.
- Bonner, B. E. Aggression in children: Developmental and functional aspects. Unpublished doctoral dissertation, Boston University, 1976.
- Brenneis, D., & Lein, L. 'You fruithead': A sociolinguistic approach to children's dispute settlement. In S. Ervin-Tripp & C. Mitchell-Kernan (Eds.), Child discourse. New York: Academic Press, 1977.

- Buckley, H. H. Aggressive behavior: A peer-oriented intervention program. Unpublished manuscript, Duke University, 1975.
- Cairns, R. B. (Ed.). The analysis of social interactions: Methods, issues, and illustrations. Hillsdale, N.J.: Lawrence Erlbaum Associates, 1979. (a)
- Cairns, R. B. Toward guidelines for interactional research. In R. B. Cairns (Ed.), The analysis of social interactions: Methods, issues, and illustrations. Hillsdale, N.J.: Lawrence Erlbaum Associates, 1979. (b)
- Cairns, R. B. Social development: The origins and plasticity of interchanges. San Francisco: W. H. Freeman, 1979. (c)
- Cairns, R. B., & Green, J. A. How to assess personality and social patterns: Observations or ratings. In R. B. Cairns (Ed.), The analysis of social interactions: Methods, issues, and illustrations. Hillsdale, N.J.: Lawrence Erlbaum Associates, 1979.
- Caldwell, B. M. Aggression and hostility in young children. Young Children, 1977, 4-13.
- Clark, R. A., & Delia, J. G. The development of functional persuasive skills in childhood and early adolescence. Child Development, 1976, 47, 1008-1014.
- Damon, W. The social world of the child. San Francisco: Jossey-Bass, 1977.
- Dawe, H. C. An analysis of two hundred quarrels of preschool children. Child Development, 1934, 5, 139-157.
- Eckerman, C. O., Whatley, J. L., & McGehee, L. J. Approaching and contacting the object another manipulates: A social skill of the 1-year old. Developmental Psychology, 1979, 15, 585-593.
- Eisenberg-Berg, N., Haake, R., Hand, M., & Sadalla, E. Effects of instructions concerning ownership of a toy on preschoolers' sharing and defensive behaviors. Developmental Psychology, 1979, 15, 460-461.
- Eisenberg-Berg, N., & Hand, M. The relationship of preschoolers' reasoning about prosocial moral conflicts to prosocial behavior. Child Development, 1979, 50, 356-363.

- Ervin-Tripp, S. Wait for me, roller skate. In S. Ervin-Tripp & C. Mitchell-Kernan (Eds.), Child discourse. New York: Academic Press, 1977.
- Ervin-Tripp, S., & Mitchell-Kernan, C. Child discourse. New York: Academic Press, 1977.
- Feshbach, S. The function of aggression and the regulation of aggressive drive. Psychological Review, 1964, 71, 257-272.
- Feshbach, S. Aggression. In P. H. Mussen (Ed.), Carmichael's manual of child psychology (Vol. 2). New York: Wiley, 1970.
- Finley, G. E., & Humphreys, C. A. Naive psychology and the development of persuasive appeals in girls. Canadian Journal of Behavioral Science, 1974, 6, 75-80.
- Flavell, J., Botkin, P. T., Fry, C. L., Wright, J. W., & Jarvis, P. E. The development of role-taking and communication skills in children. New York: Wiley, 1968.
- Furby, L. A proposal for behavior observational studies of possessiveness in young children. Oregon Research Institute Research Bulletin, 1975, 15(9).
- Furby, L. Sharing: A developmental, cross-sectional study of decisions and moral judgments about letting others use one's possessions. Unpublished manuscript, Oregon Research Institute. (Shorter version in Psychological Reports, 1978, 43, 595-609.)
- Garvey, C. Requests and responses in children's speech. Journal of Child Language, 1975, 2, 41-63.
- Garvey, C., & Hogan, R. Social speech and social interaction: Egocentrism revisited. Child Development, 1973, 44, 562-568.
- Goodenough, F. L. Anger in young children. Minneapolis: University of Minnesota Press, 1931.
- Gottman, J. M., & Bakeman, R. The sequential analysis of observational data. In M. E. Lamb, S. J. Suomi, & G. R. Stephenson (Eds.), Social interaction analysis. Madison, Wisconsin: University of Wisconsin Press, 1978.
- Gottman, J. M., & Parkhurst, J. T. A developmental theory of friendship and acquaintanceship processes. Prepared for the Minnesota Symposium on Child Psychology, October, 1978.

- Green, E. H. Group play and quarreling among preschool children. Child Development, 1933, 4, 302-307.
- Guilford, J. P. Fundamental statistics in psychology and education. New York: McGraw-Hill, 1965.
- Hapkiewicz, W. G. Developmental patterns of aggression. In J. de Wit & W. W. Hartup (Eds.), Determinants and origins of aggressive behavior. The Hague: Mouton, 1974.
- Hartup, W. W. Aggression in childhood: Developmental perspectives. American Psychologist, 1974, 29, 336-341.
- Hays, W. L. Statistics. New York: Holt, Rinehart and Winston, 1963.
- Hollenbeck, A. R. Problems of reliability in observational research. In G. P. Sackett (Ed.), Observing behavior, Vol. 2, Data collection and analysis methods. Baltimore: University Park Press, 1978.
- Houseman, J. A. An ecological study of interpersonal conflicts among preschool children. Unpublished doctoral dissertation, Wayne State University, 1972.
- Huston-Stein, A. H., Friedrich-Cofer, L., & Susman, E. J. The relation of classroom structure to social behavior, imaginative play, and self-regulation of economically disadvantaged children. Child Development, 1977, 48, 908-916.
- Jersild, A. T., & Markey, F. V. Conflicts between preschool children. Child Development Monograph, 1935, No. 21.
- Keppel, G. Design and analysis: A researcher's handbook. Englewood Cliffs, N.J.: Prentice-Hall, 1973.
- Krasnor, L. R., & Rubin, K. H. Preschoolers' verbal and behavioral solutions to social problems. Paper presented at the meeting of the Canadian Psychological Association, Ottawa, Ontario, June, 1978.
- Lakin, M., Lakin, M. G., & Costanzo, P. R. Group processes in early childhood: A dimension of human development. Unpublished manuscript, Duke University, 1976.
- Lamb, M. E., Suomi, S. J., & Stephenson, G. R. Social interaction analysis. Madison, Wisconsin: University of Wisconsin Press, 1978.

- Maccoby, E. E. Social development: Psychological growth and the parent-child relationship. New York: Harcourt Brace Jovanich, 1980.
- McCall, R. B., & Applebaum, M. I. Bias in the analysis of repeated-measures designs: Some alternative approaches. Child Development, 1973, 44, 401-415.
- McKee, J., & Leader, F. The relationship of socio-economic status and aggression to the competitive behavior of pre-school children. Child Development, 1955, 26, 135-142.
- Mitchell, S. K. Interobserver agreement, reliability, and generalizability of data collected in observational studies. Psychological Bulletin, 1979, 86, 376-390.
- Mitchell-Kernan, C., & Kernan, K. Pragmatics of directive choice among children. In S. Ervin-Tripp & C. Mitchell-Kernan (Eds.), Child discourse. New York: Academic Press, 1977.
- Muste, M. J., & Sharpe, D. F. Some influential factors in the determination of aggressive behavior in preschool children. Child Development, 1947, 18, 11-28.
- Patterson, G. R. A basis for identifying stimuli which control behaviors in natural settings. Child Development, 1974, 45, 900-911.
- Patterson, G. R. The aggressive child: Victim and architect of a coercive system. In L. A. Hamerlynck, E. J. Mash, & L. C. Handy (Eds.), Behavior modification and families. New York: Brunner and Mazell, 1976.
- Patterson, G. R., Littman, R. A., & Bricker, W. Assertive behavior: A step toward a theory of aggression. Monographs of the Society for Research in Child Development, 1967, 32, No. 5.
- Patterson, G. R., & Moore, D. Interactive patterns as units of behavior. In M. E. Lamb, S. J. Suomi, & G. R. Stephenson (Eds.), Social interaction analysis. Madison, Wisconsin: University of Wisconsin Press, 1978.
- Raush, H. L. Interaction sequences. Journal of Personality and Social Psychology, 1965, 2, 487-499.
- Roff, M., & Roff, L. An analysis of the variance of conflict behavior in the preschool child. Child Development, 1940, 11, 43-60.

- Sackett, G. P. The lag sequential analysis of contingency and cyclicity in behavioral interaction research. In J. D. Osofsky (Ed.), Handbook of infant development. New York: Wiley, 1979.
- Sackett, G. P., Ruppenthal, G. C., & Gluck, J. Introduction: An overview of methodological and statistical problems in observational research. In G. P. Sackett (Ed.), Observing behavior, Vol. II, Data collection and analysis methods. Baltimore: University Park Press, 1978.
- Shantz, D. W., & Schomer, J. Interpersonal conflict in preschoolers: A naturalistic observation study. Paper presented at the Fifth Biennial Southeastern Conference on Human Development in Atlanta, Georgia, April, 1978.
- Shantz, D. W., & Shantz, C. U. Children's behavior during interpersonal conflicts: Situational and social-cognitive correlates. Research proposal submitted to the National Science Foundation, 1977.
- Shure, M. B., & Spivack, G. Problem-solving capacity, social class, and adjustment among nursery school children. Paper presented at the meeting of the Eastern Psychological Association, Atlantic City, April, 1970.
- Shure, M. B., & Spivack, G. An interpersonal problem solving approach toward social adjustment: Comprehensive report. Philadelphia: Department of Mental Health Sciences, 1975.
- Shure, M. B., Spivack, G., & Jaeger, M. A. Problem-solving thinking among disadvantaged preschool children. Child Development, 1971, 42, 1791-1803.
- Spivack, G., & Shure, M. B. Social adjustment of young children: A cognitive approach to solving real-life problems. San Francisco: Jossey-Bass, 1974.
- Suomi, S. J. Levels of analysis for interactive data collected on monkeys living in complex social groups. In M. E. Lamb, S. J. Suomi, & G. R. Stephenson (Eds.), Social interaction analysis: Methodological issues. Madison, Wisconsin: University of Wisconsin Press, 1978.
- Tedeschi, J. T., Smith, R. B., & Brown, R. C. A reinterpretation of research on aggression. Psychological Bulletin, 1974, 8, 540-562.
- Timm, N. H. Multivariate analysis with applications in education and psychology. Monterey, Calif.: Brooks/Cole, 1975.

- Walters, J., Pearce, D., & Dahms, L. Affectional and aggressive behavior of preschool children. Child Development, 1957, 28, 15-26.
- Weinstein, E. A. The development of interpersonal competence. In D. A. Goslin (Ed.), Handbook of socialization theory and research. Chicago: Rand McNally, 1969.
- Wood, J. R., Weinstein, E. A., & Parker, R. Children's interpersonal tactics. Sociological Inquiry, 1967, 37, 129-138.
- Yarrow, M. R., & Waxler, C. Z. Dimensions and correlates of prosocial behavior in young children. Child Development, 1976, 47, 118-125.
- Yarrow, M. R., & Waxler, C. Z. Observing interaction: A confrontation with methodology. In R. B. Cairns (Ed.), The analysis of social interactions: Methods, issues, and illustrations. Hillsdale, N.J.: Lawrence Erlbaum Associates, 1979.

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559-568.
- Papers: Buckley, H. H. Aggressive behavior: A peer-oriented
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Presented at the convention of the Southeastern
Psychological Association, Spring 1976.

Buckley, H. H. The use of the Bender Gestalt to assess
brain damage in children: A new look. Unpublished
manuscript, Duke University, 1975.

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